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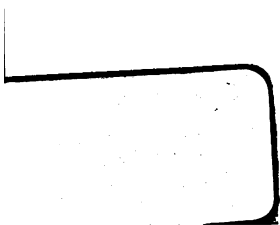
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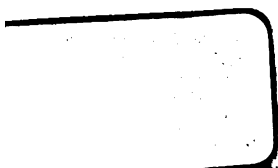
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THE
VIVISECTORS' DIRECTORY;

BEING A LIST OF THE
LICENSED VIVISECTORS IN THE UNITED
KINGDOM,

TOGETHER WITH THE
LEADING PHYSIOLOGISTS IN FOREIGN
LABORATORIES.

COMPILED FROM AUTHENTIC SOURCES.

EDITED BY
BENJAMIN BRYAN,

WITH A PREFACE BY
FRANCES POWER COBBE.

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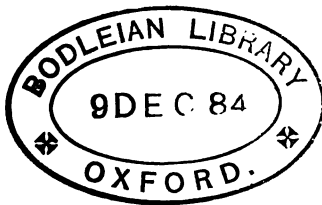
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P R E F A C E .

It was reported at the time of the Franco-German war that the Prussian soldiers profited much by their general acquaintance with the geography of France, and by the possession of convenient pocket maps furnished to them of the invaded districts.

To supply the combatants in the Anti-Vivisection Crusade with some such knowledge, and such *cartes du pays* of the physiologists' ground, was the original purpose of the *Vivisectors' Directory*, as prepared for THE ZOOPHILIST. It was recognised by those engaged in the thick of the fight against scientific cruelty that it was impossible to retain in the memory the names of all, even of the most notorious Vivisectors, or to attach to them their particular class of experiments; nor, in the case of English physiologists, was it practicable to recall without continual reference to the whole series of Parliamentary Returns what were the Licenses and Certificates wherewith they have been annually provided. These facts,—so often needed in controversy,—it was proposed to marshal in the compendious form of a *Directory*, so that each Zoophilist possessed of a copy should be enabled at a moment's notice to tell in which province of the "*doloroso regno*" of Research each Vivisector might be found, what were his titles and address, and the books he had published; and (if he were a British subject) how many Licenses and Certificates he had received.

It is hoped that this original purpose of the *Directory* has been fairly fulfilled, and that Anti-vivisectionists will universally find it to be a very serviceable book of reference. It is not pretended that it is a perfect work, that the names of all the Vivisectors in Europe have been ascertained, or their worst deeds always ferreted out. Great pains have been taken to make the list thus complete, and several able agents have been employed for the purpose abroad as well as at

home, under the editor's supervision. But years would have been needed for the exhaustive completion of the task, and the publication would have been indefinitely delayed. As it now appears, the *Directory* presents (it is confidently believed) a mass of reliable information in a convenient form, and at a moment when it is urgently needed for use in our sorrowful controversy.

But even while this first purpose of the *Directory* was being patiently carried out, it became obvious to those concerned that the work would fulfil at the same time another and still more important end. As name after name appeared for registration, and cruel experiment followed cruel experiment in endless variety, the utility of the *Directory* as affording evidence of the extent to which Vivisection is now carried on in Europe, became revealed. No doubt or dispute, it was obvious, could possibly attach to *this* testimony. There can be no question here of that "exaggeration" or those "sensational appeals" where-with our opponents are wont to charge us. There can be no "sensational appeal" in a Dictionary; nay, care has been taken that there should not be one single epithet editorially applied to any experiment recorded from first to last. The *Directory* is a mere dry Register, like an ordinary Medical or Clerical Directory of names, dates, places, degrees, books, pamphlets, licenses, and certificates. Only some *verbatim* quotations are added, with exact references to chapter and verse. If these should happen to convey most damning accusations, it is the Vivisectors themselves who have registered their own offences.

But it is a sickening revelation, even to those who have for years back been steeped to the lips in this Dead Sea literature. Few or none will have realized, we believe, till they look into this Directory as a whole, how infinitely varied have been the devices of the tormentors of animals, how relentless the diligence of these explorers of living tissues, these harpists whose instruments are quivering nerves, these diggers into living brains who leave them "like lately-hoed potato fields." Not the poor humble frogs alone, of which we are wont to hear, but every class of sensitive and intelligent animal seems to be in turn the victim of pitiless experiment,—the commonest of all being the most loving servants of mankind. Not one organ of their beautiful frames but has been chosen for the explorations of a

dozen enquirers, and mangled, burned, torn out, or inoculated with some horrible disease. The well-known maladies which result from human drunkenness and vice have been cunningly conveyed to dogs and apes. The breasts of mother brutes nursing their young have been cut off, and the mutilated creatures dropped back to die among their little ones whom they can no longer feed. Pregnant animals have been continually cut open. An Italian physiologist (Mosso) injects putrified human brains into animals. The eyes are chosen as the special seats for inoculation, because, through the transparent body the processes of disease can be most easily watched. Balbiani varnished the skins of dogs, so that after long hours in which all exudation was stopped, the creatures expired—stewed, as it were, in their own blackened blood. Claude Bernard and Alfred Richet baked them alive in stoves constructed for that hideous purpose. Paul Bert and Cyon place them under atmospheric pressures till a dog comes out stiffened all over “like a piece of wood.” Brown-Séquard and Brondgeest cut the spinal cords of guinea-pigs and rabbits, and Chauveau opens the spinal canal of horses and irritates the roots of the nerves. Nasse injects salt into the veins, and Watson Cheyne injects micrococci into the eyes. Blondlot and Heidenhain establish fistulas. Aufrecht endeavours to create kidney disease, and Köbner leprosy. Bacchi and Donders pour acetic acid on the nerves of the eyes. Audigé, Colin, Miss Adams, Gréhaut, and Gscheidlen, experiment on various animals with mineral and vegetable poisons; and Fayrer, Brunton, and Lacerda with that of snakes. The bile ducts of dogs and cats are ligatured by Wickham Legg and Rutherford. Skulls of monkeys and dogs are opened and the brains mutilated and stimulated with electricity by Ferrier, Yeo, Horsley, Schäfer, Goltz, Hitzig, Fritsch, Golgi, Grützner, Günther Leyden, Hermann, Loven, Munk, Longet, Luchsinger, Ott, and Vulpian; and the stomach, heart, liver and spleen, are cut into and diversely dissected alive by a whole host of physiologists, Roy, Gaskell, Lepine, Pellacani, Cohnheim, Marey, Martin, Colasanti, Panum, Moleschott, and Flint.

When it is remembered that, according to Claude Bernard in his latest work, we may “take for granted that experiments, when not otherwise described, are performed on curarized dogs”—that is, on highly sensitive creatures, placed in a condition which he himself describes as “accompanied by

the most atrocious suffering which the imagination of man can conceive,"—we have before us in this small Directory a record of agonies before which the brain grows dizzy and the heart sick. That any man not utterly science-hardened can contemplate them with indifference, and refuse to lift his voice against them, is difficult to understand. He who will look through this little book and then "pass by on the other side," might, one would think, have strolled round Nero's martyr-lighted gardens and turned unmoved away.

F. P. C.

THE VIVISECTORS' DIRECTORY.

Abraham, Phineas S., 5, Clare Street, Dublin. M.A.T.C. Dub.; B. Sc. Lond.; F.R.C.S.E. 1880; (St. Barthol. Lond.; T.C. Dub. and Paris); 1st Sen. Mod. and Large Gold Medallist in Nat. Sci. and Mod. in Exper. Sci., T.C. Dub., 1871; Hon. Sec. Dub. Biol. Club., Contrib. to Proc. Zool. Socs., Lond. and Paris, &c.

Held a License for Vivisection in Physiological Lecture Room of Royal College of Surgeons, Dublin, in 1880.

Adams, Hope Bridges (Miss), Student Bedford College, studied medicine at Leipzig under Professors Ludwig and W. His. Graduated L.K.Q.C.P. Ireland and M.D. Zurich. Married to Dr. Walthers. Settled in practice at Frankfort. Leipzig Pathological Institute.

"Miss Bridges Adams made a number of experiments on the secretion of hæmoglobin in the Pathological Institute at Leipzig, on rabbits and dogs, which she poisoned slowly with chlorate of potassium and other similar substances, by which the kidneys, bladder, and spleen were morbidly affected. The animals vomited, a deposit collected in the bladder, and they died after sufferings more or less prolonged. Dr. Lebedoff (of St. Petersburg), who is continuing the investigations, affirms that she attained no definite result and that the experiments do not give one the impression of having been carried out with thoroughness."—*Thier u. Menschen Freund*, No. 7, 1883.

Albertoni (Prof.), *Materia Medica* R. Univ. Genoa. Substitute in Chair of Physiology in absence of Prof. Cerradini, Senior Physician Hospital for Chronic Diseases.

Author of "Influenza del cervello nella produzione dell' epilessia; che cosa avvenga del sangue nella trasfusione;" and joint author with Dr. Bufalini: "Sull' aumento delle pulsazioni cardiache dietro l'eccitazione delle prime radici dorsali;" and with Dr. F. Lussana, of "Sull' alcool, ricerche sperimentali;" 3rd art. in "Lo sperimentale," 1874.

Experiments in transfusion of blood, tried successfully on dogs, subsequently on three human patients who died, the transfusion having "hastened the fatal issue."—*Archiv. Ital.*, Tome 2, p. 180. Repeated experiments of Chirone and Curci on apes, arriving at opposite conclusions.

Albini, Commendatore Giuseppe, Palazzo Dini, Via Museo Nazionale, Naples. Oculist. Prof. Histology, Anatomy and Physiology. Director of the Institute of Physiology in Royal University, Naples. Vice-President of the Academy of Physical and Mathematical Science. President of the Neapolitan Branch of Italian Alpine Club.

Author of "Ueber das Gift der Salamander Maculata," Vienna, 1858; "Sull' azione aspirante del cuore," Naples, 1862; "Sul meccanismo della deglutizione," 1863; "Guarigione di una Fistola gastrica in un cane," 1867; "Guida allo studio della Fisiologia

normale e sperimentale," 1870; "Rendiconto dell' Istituto fisiologico di Parma," Parma, 1860; "Rendiconto dell' Istituto fisiologico di Napoli," 1860-64.

Anderson, Richard John, 58, Wellington Park, Belfast. M.A. Qu. Univ. Irel. (1st Hons. in Exper. Science, Gold Medal and Prize), 1870; B.A. (2nd Hons. and Prize in Exper. Science), 1869; M.D. (1st Hons., Gold Medal and Prize) 1872; M.R.C.S. Eng., and L.M.) 1872; (Belfast, St. Barthol. London, Leipzig, Paris, and Heidelberg); Demonstrator of Anat. Qu. Coll. Belfast; Prof. of Zoology, Galway, 1884.

Contributed "Abnormal Arrangement of Peritoneum," Journ. Anat. and Physiol., 1878; "The Presence of an Astragalo-scapoid Bone in Man," *Ibid.*, 1880; "Respiratory Excitation and Depression," Dub. Journ. Med. Science, 1880; and other Contributions to Journ. Anat. and Physiol., Dub. Journ. Med. Science, Virchow's Archiv., and Brit. Med. Journ.

Held a License for Virisection at the Physiological Laboratory, Queen's College, Belfast, in 1879-80-81-82-83. No Experiments returned in 1882-83.

Arloing (Prof.) Prof. Anat. and Physiol. and of practical experiments in the École Nationale Vétérinaire of Lyons.

Aufrecht, (Dr.), Magdeburg.

"Experiments in the artificial induction of diseases of the kidneys. Used formerly to tie the ureter, has now injected *Cantharides* under the skin of rabbits, and produced the disease in all its forms."—*Med. Centralblatt*, No. 47, 1882.

Aubert, Hermann. Prof. Rostock University.

Author of "Physiologie der Netzhaut," Breslau, 1865; jointly with Gustav Roever, of Rostock, of "Ueber de Vasomotorischen Wirkungen des nervus vagus, laryngicus und sympathicus," Pflüger's Archiv, Vol. II, p. 211. This essay describes experiments on dogs, cats, rabbits, and lambs.

"Constructor of a 'handy apparatus' for bringing animals into a state of asphyxia in air attenuated or deprived of oxygen."—Pflüger's Archiv., 27, p. 566.

Audigé, R. H. T., 26, Avenue Bosquet, Paris. M.D., Paris, 1874.

Author of Thèse "Recherches expérimentales sur le spasme des voies biliaires," Paris.

"Alcohols administered in a slow and continuous manner were found to give rise to various disorders. Vomiting of biliary matter and glairy mucus together with more or less severe diarrhoea were observed. Difficulty of breathing, muscular tremor, and even paresis of the hinder extremities were also recorded. Examination after death revealed congestive changes of the alimentary canal and of the liver, but no hepatic cirrhosis. Well-marked hyperæmia of the lungs and atheroma of the large vessels, especially the aorta were also detected. . . . Absinthe when given to the animals gave rise to great excitement with muscular contracture and cutaneous hyperæsthesia."—*Lancet*, June 30th, 1883.

"* * We must not overlook the extreme sensitiveness of the mucous membrane which lines the ducts; we have just seen that an injection into the biliary ducts of water mixed with a small quantity of acetic acid produces in dogs acute pain."—*Collection de Thèses pour le Doctorat*, Paris, 1874, p. 27.

The biliary ducts of a curarised dog dissected out and then excited by electricity so as to produce spasms.—*Ibid.*

Axenfeld, Alexandre, Camerino, Italy. Prof. pathologie medicale, Med. Faculty, Paris.

Contributed to "Dictionnaire Encyclopédique des Sciences Médicales," Paris, 1880.

Bacchi, M. E. M.D., Turin, Laureate Univ., Turin; M.D. Paris, 1874; Prof. Ophthalmology, Medical Faculty, Paris.

Author of "Contribution à l'étude de l'étiologie de la scléroroïdite postérieure, Paris, 1874."

This Thesis also describes experiments in which neuralgic pains are produced by the application of electricity to the orbital nerves of a rabbit—the torture being continued for from half-an-hour to an hour daily from September 14th to October 30th.

Exper. IV. "I exposed the upper orbital nerve on the left side of another rabbit, and then I poured on to it a few drops of a strong solution of acetic acid. The pain was so violent that the animal emitted heartrending shrieks and writhed in the throes of a violent agony."—*Collection de Thèse pour le Doctorat*, Paris, 1874, pp. 59 and 61.

Baginsky, Benno. M.D. Berlin, 1872.

Contrib. "Über die Folgen der Drucksteigerung in der Paukenhöhle," Virchow's Archiv., 1881.

Made experiments on dogs in the Veterinary School of Berlin.

Balbani (Prof.). Prof. Embriology, Coll. de France.

Made experiments by varnishing the skins of animals, especially rabbits and guinea-pigs.—*Traité de physiologie*, Béclard, Paris, 1860, Vol. I., p. 495. Chiefly known as an Embryologist.

Balfour, Francis Maitland. B. 1851, d. 1882. (Killed by a fall on the Glaciers of Courmayeur Alps). Educated at Harrow and Cambridge, where he graduated subsequently; he studied at the Stazione Zoologica at Naples, under Dr. Dohrn. Was Lecturer on Natural Science, Embryology, and Comparative Anatomy at Trinity College, Cambridge. Fell. Roy. Soc. 1878; Mem. Counc. Roy. Soc.; Pres. Cambridge Philos. Soc. 1881; LL.D. Glasgow 1880. The Professorship of Animal Morphology at Cambridge was created specially for him. Was for several years one of the editors of the *Quarterly Journal of Microscopic Science*. A Balfour Fund has been raised to found memorial at Cambridge.

Balfour, John Hutton, Junr., East Brighton Crescent, Portobello, M.B., Edin. and C.M., 1881.

Held a License for Vivisection at University College, Edinburgh, Materia Medica Department, in 1882, and Certificate for Experiments without Anæsthetics, same year.

Barker, John, M.D. Deceased, 1879. M.D. Dublin, 1863; M.B. 1846, B.A.; F.R.C.S.I. 1863; L. 1846; (T.C. Dublin); Exam. in Anat. and Surg. and Cur. Mus. M.R.C.S.I.; M.R.I.A.; formerly Demonstrator of Anatomy, Univ. Dublin.

Author of Cryptogamic Part in "Steel's Handbook of Field Botany," and other papers.

Held a License for Vivisection at Royal College of Surgeons, Dublin Physiological Laboratory and Lecture Room, 1878-79. No experiments returned.

Barlow, John, 85, Kelvingrove Street, Glasgow. M.D. Edin., 1879; M.B. and C.M. 1875; M.R.C.S. Eng., 1874; F.F.P.S. Glasg., 1881; (Anderson Univ., Univs. Glasg. and Edin); Prof. of Inst. of Med. Anderson's Coll. Glasg.; late Muirhead Demonstr. of Physiol., Univ. Glasg.; House Surg. Glasg. Roy. Infirm.

Contributed "Mode of Demonstrating Pflüger's Law of Contraction," Jour. Anat. and Physiol., Vol. XII.; "Physiological Action of Ozonised Air," *Ibid*, Vol. XIII.

Held a License for Vivisection at University of Glasgow, Physiological Laboratory and Class Room in 1878-79-80-88. Certificate in 1878 and 1879 for Illustrations of Lectures, for Experiments without Anæsthetics, and for Testing previous Discoveries; in 1880 for Illustrations of Lectures and for Experiments without Anæsthetics; and in 1883 for Illustrations of Lectures. No Experiments returned in 1888.

Bartholow, Robert. Cincinnati. M.D.

Author of "A Practical Treatise on Materia Medica and Therapeutics," New York, 1878.

Experiments on the action of *Gelsemium sempervirens*.

Battistini, Attilio. M.D. University of Rome.

Beatson, George Thomas, 2, Royal Crescent, Glasgow. B.A. Cantab., 1870; M.D. Edin., 1878; C.M., 1874; L.R.C.S. Edin., 1874 (Edin. Univ.); formerly Sen. Pres. Roy. Med. Soc. Edin.

Contributed "On the causes of Expense in the Antiseptic Treatment of Wounds," Glasg. Med. Journ., 1879; "Origin and Composition of Bodies found in Compound Ganglia," Journ. Anat. and Physiol., Vol. XIII.; "Diagnosis of Malignant Abdominal Tumours," Glasg. Med. Journ., 1879.

Held a License for Vivisection at University Glasgow Physiological Laboratory in 1879 and Certificate dispensing with obligation to kill before recovery from Anæsthetics.

Beaunis, Henri Etienne. Prof. of Physiology, Med. Faculty, Nancy.

Author of "Nouveaux éléments de Physiologie humaine," Paris, 1876; joint author with M. Bouchard of "Éléments d'Anatomie descriptive et d'Embryologie," 1873.

Devotes several chapters of his work on Physiology to a detail of the necessary arrangements of the physiological laboratory, and particularly recommends students to study physiology by vivisectioning frogs, as being more readily procured than other animals, and easily held by pinning them on a piece of cork.

Béclard, Jules, au Siège de l'Académie, 39, Rue des Saints-Pères. B. 1818; M.D. Paris, 1842; Professor of Physiology Med. Faculty, Paris; Perpetual Sec. Acad. of Medicine, &c.

Author of "Traité élémentaire de Physiologie," Paris, 1880; "Expériences constatant l'électricité du sang chez les animaux vivants," Metz, 1863. Contributed to "Dictionnaire Encyclopédique des Sciences Médicales," Paris, 1880.

"When by the aid of appropriate means, we suppress in animals the cutaneous evaporation, and thus absolutely prevent the discharge of water, vapour, and carbonic acid, grave disorders are set up little by little, terminating in death. In order thus to suppress the functions of the skin, it is advisable to lay bare, by means of shaving closely, the whole of the skin of a dog, sheep, rabbit, or horse, and to cover the exposed surface with a thick drying varnish. Animals thus treated succumb at the expiration of various periods, but they rarely survive twelve hours. After death the tissues and organs are found gorged with black blood. It is probable that the accumulated carbonic acid has brought on slow asphyxia. When the pulmonary outlet is sealed up, the asphyxia is rapid."—*Traité de Physiologie*, Béclard, Paris, 1880, Vol. I., p. 495.

Béclard, Pierre Augustin. B. 1785, d. 1825. Assistant to M. Roux, 1809; Prosector Med. Faculty Paris, 1811; Prof. Anat., 1818; Mem. Acad. of Med., 1820.

Made experiments jointly with Legallois on the Act of Vomiting. —*Traité de Physiologie*, Béclard, Paris, 1880, Vol. I., p. 62.

Author of "Additions à l'Anatomie générale de X. Bichat," Paris, 1821; "Éléments d'Anatomie générale," Paris, 1823; *Traité Élémentaire de Physiologie*, Septième Edition, Part I., Paris, 1880; Part II., 1884.

Bégin, Louis Jaques. B. at Liège, 1793; d. 1859. Prof. Physiol., Military Gymnasium, Metz, 1821; M.D. Strasbourg, 1823; Prof. Anat., Physiol. and Surgery, Med. Faculty, Strasbourg; Pres. Acad. of Med., Paris, 1847; Mem. of numerous foreign learned societies.

Author of "Traité de Physiologie pathologique," 1828, &c.; contributed Art. "Vomissement," "Dictionnaire Encyclopédique des Sciences Médicales."

Behrend, F. Student, Berlin.

Experiments on rabbits under Dr. Lewin on the chemical effect of *uva ursi* leaves and arbutin.—*Virchow's Archiv.*, Vol. 92, Pt. III.

Bell, Sir Charles. B. 1778, d. 1842. M.E.C.S., Surg. Roy. Infirm., Edin., 1797; M.R.C.S., Lond., Surg. Middlesex Hosp., 1812; Sen. Prof. Anat. Surg. Roy. Coll. Surg., Lond., and M.C., 1824; Lect. Physiol., Univ. Coll., Lond., 1826; knighted, 1831; Prof. Surg. Univ. Edin., 1831.

Author Vol. 3 of "Anatomy of the Human Body," 3 vols., London, 1793 (by John Bell); "Anatomy of the Brain," London, 1802; "A System of Operative Surgery," 2 vols., London, 1807; "An Exposition of the Natural System of the Nerves of the Human Body," London, 1824; "The Nervous System of the Human Body," London, 1830; "The Hand, its Mechanism and Vital Endowments," London, 1834-52; Various papers in "Philosophical Transactions," "Institute of Surgery," &c., &c. The discoverer of the double function of the spinal nerves, and the most humane vivisector on record. Among the published accounts of his experiments is the following:—

"After delaying long on account of the unpleasant nature of the operation, I opened the spinal canal of a rabbit and cut the posterior roots of the nerves of the lower extremity—the creature still crawled—but I was deterred from repeating the experiment by the

protracted cruelty of the dissection. I reflected that the experiment would be satisfactory if done on an animal recently knocked down and insensible—that whilst I experimented on a living animal, there might be a trembling or action excited in the muscles by touching a sensitive nerve, which motion it would be difficult to distinguish from that produced more immediately through the influence of the motor nerves.”—*Nervous System of the Human Body* (Longman and Co.), 1830, p. 31.

The following extract contains the well-known conclusions of Sir Charles Bell respecting the utility of Vivisection and its moral aspect :—

“ In concluding these papers, I hope I may be permitted to offer a few words in favour of Anatomy, as better adapted for discovery than experiment. Anatomy is already looked upon with prejudice by the thoughtless and ignorant—let not its professors unnecessarily incur the censures of the humane. Experiments have never been the means of discovery—and a survey of what has been attempted of late years in physiology, will prove that the opening of living animals has done more to perpetuate error than to confirm the just views taken from the study of anatomy and natural motions. In a foreign review of my former papers the results have been considered as a further proof in favour of experiments. They are, on the contrary, deductions from anatomy, and I have had recourse to experiments not to form my own opinions, but to impress them upon others. It must be my apology that my utmost efforts of persuasion were lost, while I urged my statements on the grounds of anatomy alone. For my own part I cannot believe that Providence should intend that the secrets of nature are to be discovered by the means of cruelty, and I am sure that those who are guilty of protracted cruelties do not possess minds capable of appreciating the laws of Nature.”—*Ibid.*, p. 217.

Similar sentiments are expressed in his “ Essay on the Forces which Circulate the Blood,” Part II., p. 25.

Bellesme, Jousset de. School of Physiology, Nantes.

Author of “ *Physiologie Comparée Recherches expérimentelles sur les fonctions du balancier chez les insectes*,” Paris, 1879; “ *Recherches sur la digestion chez les mollusques céphalopodes*,” *Comptes rendus* Vol. LXXXVIII. (1879), p. 428; “ *Recherches sur l'action physiologique du grenat ou résidu de fabrication de la fuchsine*,” *Comptes rendus*, Vol. LXXXVIII. (1879), p. 187.

Belli, Aristide (Prof.), Director of the School of Veterinary Medicine, Urbino.

Bennet, Alex. Hughes, 13, Old Cavendish Street, W. M.D., Edin. (Gold Medallist), 1872; M.B. and C.M., 1869; M.R.C.P., Lond. 1876 (Edin., Lond. and Paris); Mem. Path. Soc. Lond.; Ext. Mem. and Emer. Sen. Pres. Roy. Med. Soc. Edin.; Physician Hospital for Epilepsy and Paralysis, St. John's Wood, and to the Westminster Hospital, &c., &c.

Author of “ *An Experimental Inquiry into the Physiological Actions of Theine, Caffeine, Quaranine, Cocaine, and Theobromine*,” 1873; “ *A Practical Treatise on Electro-Diagnosis in Diseases of the Nervous System* ;” “ *Illustrations of the Superficial Nerves and Muscles, with their Motor Points*,” &c.

Bennett, John Hughes, M.D. Professor of the Institutes of Medicine in the University of Edinburgh; died 1875.

President of the Committee which performed the experiments on the effect of mercury, &c., on the livers of dogs. He was accustomed to lecture to his class on the benefit of vivisection, and advised his students to resist every attempt to interfere with it. Originator and suggestor of Rutherford's experiments on the bile ducts.

Béraud, J. B. Author of "Manuel de physiologie," Paris, 1853. Experiments on generative organs.

Bergeron, E. J., 75, Rue St. Lazare, Paris. M.D. Paris, 1866; Prof. Med. Fac. and Insp. of Lunatic Asylums for the Department of Seine, Knight of the Legion of Honour.

Author of "Les Réactions physiologiques des Poisons," Paris, 1836; "Sur l'existence normale du cuivre dans l'organisme," Paris, 1873; "L'empoisonnement par la strychnine," Paris, 1877, &c.

At the age of 26, M. Bergeron was commissioned to undertake a long series of experiments in several poisoning cases.

Berlin, W. (Dr.), Amsterdam University.

Bernard, Claude. B. at St. Julien, Rhone, France, 1813; d. 1878. M.D. Paris, 1843; Pupil and Assistant to M. Majendie; Prof. of Medicine at Faculty of Science, Paris; Member of the Academy of Science; succeeded Majendie as Professor of Experimental Physiology at the College of France in 1855; Prof. Gen. Physiol. at Museum, 1868; Mem. Acad. Med., 1861; Pres. Biological Soc., 1867; Member of French Academy, 1869; Commander of the Legion of Honour, 1867. Member of the Institute of France.

Author of "Leçons de physiologie expérimentale," Paris, 1854-1855, 2 vols.; "Introduction à l'étude de la Médecine expérimentale," Paris, 1855; "Leçons sur les effets des Substances toxiques et Médicamenteuses," Paris, 1857; "Leçons sur la physiologie et la pathologie du système nerveux," Paris, 1858; "Leçons sur les propriétés physiologiques et les altérations pathologiques des liquides de l'organisme," Paris, 1859; "Leçons de pathologie expérimentale," Paris, 1871; "Leçons sur les anesthésiques et sur l'asphyxie," Paris, 1875; "Leçons sur la chaleur animale," Paris, 1876; "Leçons sur le diabète et la glycogénèse animale," Paris, 1877; "Leçons sur les phénomènes de la vie, etc.," Paris, 1878; "La science expérimentale," Paris, 1878.

"A physiologist" (Bernard wrote) "is no ordinary man. He is a learned man, a man possessed and absorbed by a scientific idea. He does not hear the animals' cries of pain. He is blind to the blood that flows. He sees nothing but his idea, and organisms which conceal from him the secrets he is resolved to discover."—*Introd. à l'étude*, p. 180.

Baked sixteen dogs and numerous rabbits in a stove. These animals, Bernard tells us (*Leçons sur la Chaleur Animale*, p. 347), survived respectively eight minutes, ten minutes, twenty-four minutes, and so on, according to the heat of the stove and according to the position of their heads within it, or outside of it. "It became impossible," he says of them, "to count the pantings. At last the creature falls into convulsions and dies—uttering a cry."

"Our hands without doubt are empty at present, but our mouths may be full of legitimate promises for the future."—*Sur le Diabète*, p. 43.

Bernstein, Jules (Prof.) B. Berlin, 1839. Halle University. M.D. Berlin; Prof. extraordinary of Medicine, University of Berlin, 1871; Prof. extraordinary of Medicine at Halle, 1873.

Author of works on the Nervous System; "Herzstillstand durch Sympathicusreizung;" "Die fuenf Sinne des Menschen," in "Internationale Wissenschaftliche Bibliothek," Vol. XII., 1875; "Untersuchungen ueber den Erregungsvorgang im Nerven und Muskelsystem." Heidelberg. Darmstadt, 1871.

Has made a special study of the effects of electric currents on the nerves, and his work entitled "Untersuchungen ueber den Erregungsvorgang im Nerven und Muskelsystem," is well known to physiologists.

Berruti, Giuseppe.

Author of "La Crania tornia nella practica ostretica," Turin, 1876; with Perosini of "De l'ablation des capsules surrenales," in *Gazette Hebdomadaire de Méd.*, 1856, p. 863 et 924.

Performed numerous experiments on Horses.

Bert, Paul, 9, rue Guy-de-la-Brosse, Paris. M.D., Paris, 1863; Prof. Physiol. Fac. Sci. at Bordeaux, 1869; obtained the Prize of 20,000 francs from the Academy of Science for his work on "La Pression Barométrique" in 1875; President Biol. Soc.; Senator and Minister of Public Worship for France, under the Presidency of M. Gambetta.

Author of "Notes d'Anatomie et de Physiologie comparées," 1867; "La Pression Barométrique," 1877; Contrib. Scientific Articles to "La République Française."

"He thought it would be interesting to experiment upon newborn animals (cats), which, it is well known, he tells us, resist asphyxia much longer than full grown ones. (P. 571.) From his apparatus for keeping animals in compressed oxygen he draws a dog in full convulsions, strong enough to enable him to carry it by one paw, like a bit of wood. (P. 784.) The attacks of convulsions, under strong tension of oxygen, are, he says, really curious and startling." (P. 799.)—*Pression Barométrique*.

"In this experiment a dog was first rendered helpless and incapable of any movement, even of breathing, which function was performed by a machine blowing through a hole in its windpipe." All this time, however, "its intelligence, its sensitiveness, and its will, remained intact," "a condition accompanied by the most atrocious sufferings that the imagination of man can conceive." (*Vide* Claude Bernard in *Revue des Deux Mondes*, 1st September, 1864, pp. 173, 182, 183, &c.) In this condition, the side of the face, the side of the neck, the side of the fore-leg, interior of the belly and the hip, were dissected out in order to lay bare respectively the sciatic, the splanchnics, the median, the pneumo-gastric and sympathetic, and the infra-orbital nerves. These were excited by electricity for ten consecutive hours, during which time the animal must have suffered unutterable torment, unrelieved even by a cry. The inquisitors then left for their homes, leaving the tortured victim alone with the engine working upon it, till death came in the silence of the night and set the sufferer free." (Roy. Com., Q. 4,111.)—*Archives de Physiologie*, Vol. II., 1869, p. 650.

Betz, Fr. Hugo. M.D.; Surgeon in practice in Schönan, Silesia, 1877.

Contrib. "Anatomischer Nachweis zweier Gehirncentra," Centralblatt f. d. Med. Wiss., 1874.

Made experiments on the brains of dogs.

Bezold, Albert Von. B. 1836, at Ansbach, d. 1868 at Würzburg. After studying at Munich and Würzburg, Bezold went to Berlin to study physiology under Du Bois Reymond; there he became the friend of Isidor Rosenthal and Wilhelm Kühne. In addition to the study of physiology, Bezold followed Virchow's lectures on pathological anatomy and worked in the laboratory of Hoppe-Seyler, now Prof. of Physiological Chemistry at Tübingen. He became assistant to Du Bois Reymond, but was soon after called to the Chair of Physiology at Jena. Bezold's experiments on the *nervus vagus* produced results opposed to the theories of Schiff and Moleschott. Professor of Physiology at Würzburg, 1865, where he extended the laboratory to be one of the most complete in Germany. While at Jena he had already enlarged the laboratory there, and had taken a journey to Edinburgh to superintend the arrangement of Dr. Bennett's laboratory.

Author of "Untersuchungen über die Innervation des Herzens," Leipzig, 1863; "Untersuchungen über die electrische Erregung der Nerven und Muskeln" Leipzig, 1861.

Bianchi, (Prof.), 315, Via Salvator Rosa, Naples. Electrotherapist. Prof. Medical Pathology, Royal University, Naples.

Bichat, Marie François Xavier. B. 1771; d. 1802. Studied at Nantes, Lyons, and Paris, where he became the pupil of Desault, whose works he edited posthumously, 1795. Relinquished surgery to devote himself entirely to physiology. Physician to the Hotel Dieu, 1799, where he experimented with various drugs.

Author of "Traité des Membranes en général et de diverses Membranes en particulier," Paris, 1800; "Recherches Physiologiques sur la vie et la mort," Paris, 1803; "Anatomie générale appliquée à la Physiologie et à la Médecine," Paris, 1801; "Anatomie descriptive," Paris, 1802-1803, 5 vols., end of 2nd and 3rd Vols. by Buisson, 5th Vol. by Roux.

"Experimental Physiology dates from Bichat."—*Traité de Physiologie*, Béclard, 1880, vol. I., p. 11.

"Bichat has made, in this respect, an experiment on living animals, which all physiologists have since repeated. A tube with a turn-cock is introduced and fixed in the trachea of a dog, and an artery is subsequently opened in the animal. At first the respiration is allowed free action; then the turn-cock is shut, respiration is thereby suspended, and with it the entrance of the air into the lungs. The blood which issued from the wound in the artery was first red; it becomes analogous to venous blood. When the turn-cock is again opened, the blood once more takes a bright hue."—*Ibid.*, p. 336.

Bidder, Alfred Von. M.D. Berlin.

Author of "Ueber functionnel verschiedene und räumlich getrennte Nervencentra im Froschherzen," Müller's Archiv., 1844; Joint author with M. Schmidt "Die Verdauungs säfte und der Stoff-

wechsel," 1852; Contrib. to Berliner Klinische Wochenschrift, 1883; Arch f. Anat. u. Physiol., 1867.

Performed numerous experiments on animals with M. Schmidt.—*Traité de Physiologie*, Béciaud, 1880, Vol. I., p. 662.

Billroth, Theodor. B. Bergen, Isle of Rügen, Prussia, 1829. Surgeon, Physiologist, Microscopist, Univs. Greifswald, Göttingen, Berlin, and Vienna. Clin. Asst. Univ. Berlin, 1830; Prof. Surgery, Zurich, 1860; Prof. Surgery Vienna, 1867.

Author of "Beobachtungsstudien ueber Wundfieber und accidentelle Wundkrankheiten," Berlin, 1862; "Die allgemeine Chirurgische Pathologie und Therapie," Berlin, 1863; "Handbuch der allgemeinen und speciellen Chirurgie, &c.," Berlin, 1865; "Ueber das Lehren und Lernen der Medicinischen Wissenschaften an den Universitäten der deutschen Nation, nebst allgemeinen Bemerkungen ueber Universitäten," Vienna, 1876; "Untersuchungen ueber die Entwicklung der Blutgefäße, nebst Beobachtungen aus der Klinischen Chirurgischen Universitäts-Klinik zu Berlin," Berlin, 1876, &c.

Binz, Carl Born 1832, at Berncastel on the Moselle; studied Med. at Univs. Wurzburg, Bonn, and Berlin; M.D. 1855 (Bonn); Private Prof. of Med. and Pharmacology, Bonn, 1862; Prof. extraordinary and founder of Institute of Pharmacology University of Bonn, 1868; Prof. in ordinary, 1873. Staff-Surgeon during the campaigns of 1866 and 1870-71.

Author of "Beobachtungen zur inneren Klinik," Bonn, 1864; "Gründzüge der Arznei Mittel Lehre," "Experimentelle Untersuchungen ueber das Wesen der Chininwirkung," Berlin, 1868; "Ueber den Traum," Bonn, 1878, etc.

Experiments with nitrite of sodium on frogs, rabbits, and dogs.—*Lancet*, Nov. 3, 1883.

"Binz produced fever in dogs artificially by injecting infusion of hay or putrid animal matter into their veins, and then tested the action of quinine by injecting it either at the same time or shortly afterwards."—*Experimental Investigation into the action of Medicines*, T. Lauder Brunton, London, 1875, p. 20.

Biondi, Adolfo, Strada Nuova, Monteoliveto 6. Prof. Pathological Medicine, Royal University, Naples.

"I cannot imagine that any man in his senses would attempt to remove a human lung with a tumour in it. It would not be resection of parts of four ribs which would permit the removal of a tumour sufficiently large to admit of accurate diagnosis; and I cannot observe, in the literature just at the moment accessible, that any other kinds of tumours occur in the lung, save those of hydatid origin, and those of a cancerous nature. If the tumour were hydatid, the removal of lung would be unnecessary. If the tumour proved to be an aneurysm, the disaster would be awful. . . . The facility with which Dr. Biondi has removed lungs, and parts of lungs, from dogs, guinea-pigs, cats, fowls, pigeons, and sheep, and the absence of mortality from such operations, is likely to be a snare rather than a help. It does not need saying, that the removal of a healthy lung, collapsed by the introduction of air into the pleura, would be a very easy matter, and very different from the removal of a diseased and adherent organ. There would be as much difference as there is between normal ovariectomy and removal of a pyosalpinx. It is perfectly clear that these animals, with their deep and narrow

chests, differ very much from us with our wide and shallow cavities, in their power of enduring the accident of acute pneumothorax; certainly they would differ from us immensely in the facility with which pneumonotomy may be performed. Their chests are built for the endurance of the special efforts of great speed, and we have lost those physical characters; and I venture to say that, if acute pneumothorax were suddenly inflicted upon sixty-three healthy adult human beings, death would be the immediate result in the great majority of the experiments."—*Lawson Tait, F.R.C.S., Brit. Med. Journ., June 20, 1884.*

Birch, J. de Burgh, Barnard Castle, Durham. M.D. Edin. (Gold Medallist), 1880, M.B. and C.M., 1877; (Bristol and Edin. Univ.); F.R.S.E.; late Demonstrator of Physiology. Univ. Edin.

Contributed "Constitution and Relations of Bone Lamellæ, Lacunæ, and Canaliculi, and some effects of Trypsin Digestion on Bone," *Journ. Physiol.* Vol. II.; also contributed to *Proc. Roy. Soc. Edin. and Centralb. d. Med. Wiss.*

Held a License for Vivisection at University of Edinburgh, Lecture Room and Physiological Laboratory 1878 and in 1879. Certificate in 1879 for Illustrations of Lectures; no experiments returned.

Bischoff, Theodor Ludwig W. M.D. (Deceased.) Late Prof. Anat. and Physiol. Munich.

Author of "Commentatio de nervi accessorii Willissii anatomia et physiologia," Darmstadt, 1832; "Commentatio de novis quibusdam experimentis chemico-physiologicis ad illustrandam doctrinam de respiratione institutis. Præmissæ sunt literæ L. Gmelin," Heidelberg, 1837; "Entwicklungsgeschichte des Hundeeiess," Brunswick, 1845; "Entwicklungsgeschichte des Meerschweinchens," Giessen, 1852; "Entwicklungsgeschichte des Rehes," Giessen, 1854; "Das Hirngewicht des Menschen," Bonn, 1880; and joint author with Carl Voit of "Die Gesetze der Ernährung des Fleischfressers durch neue Untersuchungen festgestellt," Leipzig and Heidelberg, 1860; "Das Studium und die Ausübung der Medicin durch Frauen," Munich, 1872; Contributed to *Encyclopédie Anatomique*.

Performed numerous experiments on dogs and goats, on the accessory and vagus nerves, which he cut through between the cranium and first vertebra, with the result that the sound of the voice became changed. "Was most successful with a goat, in which he succeeded in cutting both accessory nerves, when it could no longer be said to have a voice at all."

Bizzozero, Giulio. B. at Varese, Lombardy, 1846. M.D. Pavia, 1866; Prof. of Histology, Pavia; Prof. of General Pathology, 1872; Professor of General Pathology, Royal Univ. Turin; Free Prof. Microscopy applied to clinical medicine; Assistant to Mantegazza at the experimental Laboratory of the University of Pavia. Has founded a Laboratory at Turin. Knight of the Order of the Crown of Italy.

Author of "Studii comparativi sui nemaspermii e sulle ciglia vibratili," 1864; "Sulla neo formazione del tersuto connettivo e sulle cellule seroventi," 1865; "Di alcune alterazioni dei linfatici del cervello e della pia madre," 1863; "Sul midollo delle ossa," 1868-69; "Sui rapporti della tubercolosi con altre malattie," 1874;

"Sui linfatici e sulla struttura delle sierose umane," 1876-78; "Recherches sur la physiopathologie du sang" (for which the Acad. of Turin has lately awarded him the prix Ribéri of 20,000 frs.); "D'un nouvel element morphologique du sang et de son importance dans la thrombose et la coagulation," dans Archives Italiennes de biologie, 1882-83; Editor of "L'Archivio delle Scienze Mediche" (Turin), a journal which relates the results of his experiments.

Experiments on constitution of blood. Animals cut open and omentum or mesentery lifted out. Some under chloroform, but "to avoid objection to the action of chloroform on the blood," also performed a great number of experiments on animals not under anæsthetics, but tied to the table.—*Archiv. Ital.*, Tom. II.

Blix, Magnus Gustaf. B. 1849. M.D., Professor Laboratory of Experimental Physiology and Medical Physics, Univ. of Upsala, 1882.

Author of several treatises in "Transactions of Medical Society, Upsala," principally concerning the contraction of the muscles, viz., "Bidrag till laran om Muskelelasticiteter," 1874; "Ennymyograph: Ophthalmometriskastudier I.," 1880; "En lymfcardiograph; Till Melysning affragan, Muravida varmenomfattes till mekaniskt arbete vid Muskelcontractioner," 1881; "Mya midsag till ophthalmometriens utveckling: en Zalfregistrerande perimenter," 1882.

Block, Carl Otto, Dantzig. M.D., 1876.

Made numerous experiments on healthy dogs, and found they did not die if a piece of the lung was cut out. Hence he became desirous of making the same experiment on men. His first victim was a girl of fourteen, who died a few hours after the operation (resection of a piece of the lung).

Blondlot, Nicolas. B. 1810. M.D. Paris, 1833; late Prof. Chemistry and Pharmaceutics Medical School, Nancy.

Author of "Traité analytique de la Digestion," Nancy, 1843; "Essai sur les fonctions du foie et doses annexes," Paris, 1846; "Recherches sur la digestion des matières Grasses," Paris, Nancy, 1855.

In his "Treatise on Digestion" Blondlot gives the results of experiments on dogs with fistulous openings into the stomach. He is generally spoken of as the first to obtain gastric juice by the establishment of a fistula into the stomach of the lower animals. (His method is given in detail in "Béclard's Traité," p. 85.) Longet, another vivisector, mentions in his Treatise of Physiology that a Dr. Bassow read a paper before the Imperial Society of Naturalists, in Moscow, in 1842, in which he gave an account of a number of successful attempts to establish a gastric fistula.

Boccardo, Giuseppe. Assistant, Physiological Institute, R. University, Naples.

Bochefontaine, Louis Théodore. Prof. Experimental Pathology, Medical Faculty, Paris.

Author of "Action physiologique de la quinine sur la rate. Essai de critique expérimentale;" "Thèse pour le Doctorat, Paris," 1873.

"All the experiments which we describe on this subject have been made on dogs and on a cat. Some few which are not mentioned

were made on rabbits and a few on guinea-pigs. The results obtained amount to little or nothing. We must say once for all that our experiments with strychnine and quinine have also given no exact result."—*Collection de Thèses pour le Doctorat*, Paris, 1873, p. 25.

"... Even in the same species of animals, though the experimenters act under identical conditions, the results obtained are not always the same."—*Ibid.*, p. 33.

Böhm, R. Prof. in Marburg.

Experiments on cats with arsenic and muscarin concerning the exfoliation of intestinal epithelium.—*Virchow's Archiv*, Vol. XCII., part 3.

Bohr (Dr.). Prof. of Physiology, Copenhagen.

Bornhardt, A. Formerly pupil of Cyon, Lab. Physiol. Acad. Med., St. Petersburg.

Author of "Experimentelle Beiträge zur Physiologie der Bogengänge des Orlabyrinths."—*Pflüger's Archiv*, Vol. XII, p. 471.

Experiments on pigeons and rabbits after portions of their brains had been extirpated.—*Pflüger's Archiv*, Vol. XII. (1876), p. 471.

Bouchard, Charles. Prof. of Gen. Path., Paris.

Contributor to "Dictionnaire Encyclopédique des Sciences Médicales." Author of "De la Pathogénie des Hémorrhagies," Paris, 1869; "Recherches nouvelles sur la pellagre," Paris, 1862; "Éléments d'Anatomie descriptive et d'Embryologie," 1873.

Bousfield, Edward Collins, Wellesley House, Ashley Road, Bristol. L.R.C.P. Lond. 1879; M.R.C.S. Eng. 1878; (St. Barthol.); Physiol. Prosect. St. Barthol. Hosp. 76-77-78. Contributed "On a hitherto unnoted feature of the blood in Leucocythaemia," *Lancet* 1879; "Effects of the Electric Light on Vision," *Ibid.* 1880; "Case illustrating the Pathology of Herpes," *Ibid.* 1880.

Held a License for Vivisection at St. Bartholomew's Medical School 1880 and 1881. No experiments returned.

Bowditch, H. P. Prof. Physiol. Lab. Harvard Med. School, Boston, U.S.

Plethysmographic experiments on the vascular nerves of the extremities.

- **Brachet, Jean Louis.** B. at Eivors (France), 1789, d. at Lyons, 1858. Hosp. Surg., Physician to Prisons, Professor of Physiology School of Medicine, Physician to Hotel Dieu, Lyons, Chev. de la Leg. d'Honn., Prof. Materia Med. and Therap., Mem. Acads. of Med. Paris, Vienna, Madrid, Turin; Mem. Acad. Sci., Arts, and Belles Lettres of Lyons, Dijon, Toulouse, Genoa; Mem. Med. Soc. of Paris, Lyons, Berlin, Gottingen, Toulouse, Marseilles, Copenhagen, Hamburg, Bordeaux, New Orleans, Besançon, &c., &c.

Author of "Dissertation Physiologique sur la cause des mouvements de dilatation des Cœur," Thèse, Paris, 1813; "Recherches Expérimentales sur les Fonctions du Système Nerveux Ganglionnaire," Paris, 1830; "Traité Complet de l'Hypochondrie," Lyons, 1844; "Considérations sur le Système Nerveux Ganglionnaire," Lyons, 1846; "Physiologie élémentaire de l'Homme," Lyons, 1855; "De la Glycogénie Hépatique," Lyons, 1856. Made numerous researches on the uses and functions of the Ganglionic system.

Braidwood, Peter Murray, 17, Rodney Street, Liverpool, and 2, Delamere Terrace, Birkenhead. M.D. Edin. (Thesis Gold Medalist) 1863; F.R.C.S. Edin. 1881, L. 1863; (Edin., Berlin, Prague, and Vienna); Astley Cooper Prizem. 1868; Honourable mention from Roy. Acad. Sci. Havana, and from Imp. Council of Russia 1872; Fothergillian Medallist 1877; F.R.M.S.; Ext. Mem. (late Pres.) Roy. Med. Soc. Edin.; Exam. in Med. Jurisp. Univ. Edin.; Co-Editor of Liverpool and Manchester Med. and Surg. Reports. Author "On Pyæmia," (Astley Cooper Prize Essay 1868); "On the Domestic Management of Children." Contrib. "On the Physiological Action of Dajaksch," Edin. Med. Journ. 1864; "First and Second Reports on the Life History of Contagion," Brit. Med. Journ. 1875-76-77-78, &c.

Held a License for Vivisection in 1878, also certificates, dispensing with the obligation to kill, and for testing previous discoveries. No experiments returned.

Brailey, William Arthur, 16, Orchard Street, Portman Square, W. M.A.; M.D. Cantab. 1874; M.B. 1871; M.R.C.S. Eng. and L.S.A. 1872; B.A. Lond. 1866; (Guy's and Univ. Camb.); Fell. Dorn. Coll. Camb. and late Inter. Coll. Lect. in Nat. Sci.; 1st Class Nat. Sci. Tripos 1867; Exhib. in Biol. Prelim. Sci. Exam. M.B. Lond. 1865; Mem. Path. Soc.; Mem. Comm. Ophth. Soc.; Lect. on Comp. Anat. Guy's and St. George's Hosp. Med. Schs.; Curator and Regist. Roy. Lond. Ophth. Hosp.; Ophth. Surg. Evelina Hosp.; late House Phys. Addenbrooke's Hosp. Camb. Contributed "On Pathology of Increased Tension," Roy. Lond. Ophth. Hosp.; Reps. 1877 and 1879; "A Theory of Elancoma," Roy. Lond. Ophth. Reps. 1880, &c.

Held a License for Vivisection at Guy's Hospital Museum and Lecture Room in 1878-79-80. No Experiments returned in 1878 and 1880.

Brewer (Dr.), Norwich, Connecticut, U.S.A.

Dr. Brewer published in the *Detroit Therapeutic Gazette* for September, 1882, an account of fifty experiments made by him on frogs, kittens, cats, and dogs, with the liquid extract of *Manaca* (a Brazilian plant) which he either exhibited "*per oram*" (to quote literally) or injected subcutaneously. The experiments were evidently made with great care, and entailed a good many difficult vivisectional operations, such as the cutting of the crural and sciatic nerves, the tying of the femoral artery, the cutting of the spinal cord, and the ablation of the cerebrum. Great pains were taken, and no fewer than eight experiments were instituted, for the sole purpose of ascertaining whether *Manaca* affected the nerves directly or through the intermediation of the blood, as most poisons do, prussic acid not excepted.

Brodie, Sir Benjamin. B. 1783, d. 1862. M.R.C.S.E. 1805; Asst. to Mr. Wilson as Demonst. of Anat.; Asst. Surg. St. George's 1810; Croonian Lecturer to Roy. Soc.; Prof. Anat. and Surg. Roy. Coll. Surg. 1819; Sergeant Surgeon to William IV. 1832; was created a Baronet 1834; Mem. Court of Exam. Coll. Surg. 1835; President Roy. Coll. Surg. 1844; President Roy. Soc. 1858.

Author of "Experiments and observations on the different modes in which Death is produced by certain Vegetable Poisons." *Edin. Review*, Vol. XVIII., p. 370, 1811.

As a young hospital surgeon Brodie employed his leisure in observations and experiments. Tied the bile ducts in cats.—*Quar. Jour. Science and the Arts*, Jan., 1823, p. 341.

Brondgeest, P. J.

Author of "Ueber den Tonus der Willkürlichen Muskeln," *Mueller's Archiv.*, 1860.

The following is an experiment of J. P. Brondgeest's:—"Cut the spinal cord beneath the bulb, and lay bare the sciatic nerves on each posterior limb. Cut one of these two nerves, and suspend the creature by the head. If we then observe the situation of the two limbs, a difference is perceived, which has been shown to be invariable in *sixty-two* experiments. The foot of which the nerve is cut is limp and pendant; that of which the nerve is intact is slightly bent in all its articulations. M. Brondgeest made similar experiments on rabbits and birds. . . . If we detach by one of its extremities a muscle newly prepared on a living animal, taking care to preserve its nerve, and attach to the extremity of this muscle a certain weight, . . . we shall see that it will augment in weight."—*Traité de Physiologie*, Béchard, 1862, pp. 640-41.

Brouardel, Paul. M.D., Paris, 1865; Phys. St. Andrew's Hosp. 1873; Prof. Med. Juris., Med. Fac., Paris, 1879.

Author of "Etude critique des diverses médications employées contre le diabète sucré," Paris, 1869; Editor of "Annales d'hygiène publique et de médecine légale."

Browne, James Crichton. M.D.; Medical officer of the West Riding Lunatic Asylum.

"Has for ten years given attention to the subject; has performed two series of experiments, one not involving destruction of life, to ascertain the action of nitrite of amyl, and one with regard to pycrotoxine, the essential constituent of *coccus indicus*; 46 animals in all, gives details, were operated on; was successful in discovering an antidote, chloral, for this poison; no opportunity of testing it on human beings has yet occurred; witness has been denounced for this cruelty, although pycrotoxine is much used for poisoned wheat; in each case the animal dies in convulsions."—*Dig. Ev. Roy. Com.*, London, 1876, p. 25.

Brown-Séguard, Charles Edouard, Laboratory of Exper. Med., Collège de France, Paris. B. at Mauritius, 1818. M.D. Paris, 1840; Prof. Med. Fac., Paris, 1869; Suc. Claude Bernard as Prof. Exper. Med. at College of France.

Author of "Dual Character of the Brain," Toner Lectures, Smithsonian Institution; "Diseases of the Nerves," Holmes's System of Surgery, Vol. III., 1860; Edit. of Archives of Scientific and Practical Med., New York; "Advice to Students," a lecture delivered at the opening of the Medical Lectures, Harvard Univ., 1876; Lectures on the Physiology and Pathology of the Central Nervous System, Roy. Coll. Surg. Eng., May, 1858; Lectures on Diagnosis and Treatment of functional Nervous Affections, 1868, &c., Philadelphia, Cambridge, U.S., &c.

"The laying bare of the spinal cord, and its free exposition to the action of the atmosphere, instead of being a cause or loss or diminution of sensibility, as it had been said, seems to be followed by a marked increase of sensibility in the parts of the body which are behind the place where the cord is exposed. . . . Deep injuries

to the posterior columns of the spinal cord are always followed by a degree of hyperæsthesia greater than after the laying bare of the nervous centres—hyperæsthesia which appeared in all parts of the body behind the place injured. . . . Before the operation in rabbits the most energetic pinching of the skin produces agitation but no shrieking; after the operation, on the contrary the least pinching produces shrieking and a much greater agitation. Sometimes the hyperæsthesia is so considerable that the least pressure upon the skin makes the animal shriek. Whether the operation is performed on the lumbar, the dorsal, or the cervical region, the phenomena are always the same—that is, there is manifest hyperæsthesia in the various parts of the body which receive their nerves from the part of the spinal cord which is behind the section. It has been so in all the animals I have operated upon, and I have already made this experiment upon animals belonging to more than twenty species. As long as the animals live after the section of the posterior columns, hyperæsthesia continues to exist, except in the cases where re-union takes place between the two surfaces of the section; but hyperæsthesia is greater during the first week after the operation than it is after a month or many months.”—*Brown-Séquard*, “*Lancet*,” 1,823 and 1,819.

M. Brown-Séquard has devoted his time since his graduation almost exclusively to experimental investigations on physiological topics, especially on the spinal column, the muscular system, the sympathetic nerves and ganglions, and on the effect of the removal of the supra-renal capsules, &c. Author of many Essays and Papers giving details of his Experiments.

Bruns, Paul Victor. B. in Helmstedt, 1812. Stud. Tübingen, 1833; M.D., 1837; Prof. Anat. College, Brunswick, 1839; Prof. Surg., Tübingen, 1840.

Author of “*Handbuch der practischen Chirurgie*,” Tübingen, 1854-60; “*Chirurgische Atlas*,” Tübingen, 1853; “*Die Durchschneidung der Gesichtsnerven*,” Tübingen, 1859; “*Die Behandlung schlechtgeheilte Beinbrüche*,” Berlin, 1861; “*Die erste Ausrottung eines Polypen in der Kehlkopföhre*,” Tübingen, 1862; “*Die Laryngoskopie*,” Tübingen, 1862; “*Chirurgische Heilmittellehre*,” Tübingen, 1868-73; “*Arznei-operationen*,” Tübingen, 1869; “*Die Galvano-Chirurgie*,” Tübingen, 1870.

Brunton, Thomas Lauder, 50, Welbeck Street, Cavendish Square, W. M.D., Edin., 1868; M.B. and C.M. (Honours and Gold Medal for Thesis), 1866; B. Sc., 1867; D.Sc., 1870; F.R.C.P., Lond., 1876; M. 1870; (Univ. Edin., Vienna, Berlin, Amsterdam, and Leipzig); Baxter Nat. Sci. Schol., Univ. Edin., 1868; F.R.S.; Fell. Roy. Med. Chir. Soc., Bot. Soc., and Med. Soc., London; Mem. (late Sen. Pres.) Roy. Med. Soc., Edin.; Lect. on Mat. Med. and Therap., and Asst. Phys. St. Barthol. Hosp.; Exam. in Mat. Med., Univ. Edin., and R.C.P., London; late Exam. in Mat. Med., Univ. London; Member of the Association for the Advancement of Med. by Research.

Author of “*On Digitalis, with some observations on Urine*” (Prize Thesis); “*Experimental Investigation of the Action of Medicines*,” “*Digestion and Secretion*,” Sanderson’s Handbook for the Physiological Laboratory; “*Tables of Materia Medica; Pharmacology and its Relations to Therapeutics*,” Goulst. Lectures R.C.P., 1877; “*Diabetes Mellitus*,” Reynolds’ Syst. of Med.; “*Diabetes Insipidus*,” *Ibid.*; “*The Bible and Science*,” Joint Author (with Sir Joseph Fayrer) of

"Nature and Physiological Action of the Poison of Indian Venomous Snakes," Proc. Roy. Soc., Contrib. "On the Use of Nitrite of Amyl in Angina Pectoris," *Lancet*, 1867; "On the Chemical Composition of the Nuclei of Blood Corpuscles," Journ. Anat. and Physiol., 1869; "On the Influence of Temperature over the Pulsations of the Mammalian Heart and over the Action of the Vagus," St. Barthol. Hosp. Reports, and Papers in Philos. Trans., &c.

"The number of animals required in experiments for research varies enormously; has himself used in all about 150 animals of different kinds, chiefly cats, because they are a convenient size, and cheaper than rabbits. Dogs cannot be got; asks no questions as to how the cats are obtained." . . . "Used 90 cats in the first series of investigations with regard to cholera, describes the method pursued, and gives reasons for it. No beneficial discovery has yet been arrived at; the experiments are still proceeding."—*Dig. Ev. Roy. Com.*, London, 1876, pp. 38-9.

"Action of Inflammation. . . . For this purpose we curarise a frog and lay it on a large plate of cork with a hole at one side, and another piece of cork half an inch high at the other. We fix the body of the frog to the raised piece, open its abdomen with a pair of scissors, draw out the intestines, and fasten the mesentery with very fine pins over the hole. In an hour and a half, or two hours afterwards, white corpuscles come rapidly out of the vessels and wander over the field. We may then inject our drug into the circulation, or apply it locally to the mesentery."—*Experimental Investigation into the action of Medicines*, T. Lauder Brunton, London, 1875, p. 23.

Held a License for Vivisection at St. Bartholomew's Hospital Medical School in 1878-79-80-81-82-83. Certificates in 1878 for Illustrations of Lectures, for Experiments without Anæsthetics, and for Experiments on Cats, Dogs, Horses, Mules and Asses; in 1879 Certificates for Illustrations of Lectures and for Experiments without Anæsthetics (this Certificate not acted upon); in 1880 and 1881 Certificates for Illustrations of Lectures; in 1882 and 1883 Certificates for Illustrations of Lectures and also for Experiments without Anæsthetics. No experiments on Horses, Mules or Asses in either year.

Budge, Julius (Prof.) B. 1811. M.D. Berlin, 1833; (Univ. Marburg, Würzburg and Berlin); Prof. Anat. P. and Zoology Univ. Bonn, 1855; Director of the Physiological Institute of Greifswald, 1856.

Author of "Untersuchungen über das Nervensystem," Frankfurt-on-the-Maine, 1841-42; "Handbuch der Physiologie," 1875; "Allgemeine Pathologie als Erfahrungswissenschaft basirt auf Physiologie," Bonn, 1845; "Memoranda der Speciellen Physiologie des Menschen," Weimar, 1850; "Über die Zwecke des Athems," Weimar, 1860; "Compendium der Physiologie des Menschen," Leipzig, 1864; "Ueber den Schmerz," Leipzig, 1866.

"From observations on human patients we have already learnt that pain causes movements of the bladder. But we can also demonstrate this fact experimentally. Not always, but in many instances I have seen that in curarised animals in whom it is well known the sensibility of the nerves long outlasts their mobility, that the pressure of the water rose when I galvanized the trigeminal nerve, that is, if I placed the electrode on the eye or on the mucous

membrane of the nose, or when I irritated the central end of a nervus vagus, which fact Oehl has also observed (C. r. 1865, II., p. 340). Also other sensitive nerves can occasion movements of the bladder."—"Über die Reizbarkeit der Vorderen Rückenmarkstänge." *Pfuger's Archiv.*, Vol. II., p. 515.

Bufalini, Giovanni. Prof. Siena University.

Author (with L. Luciani) of "Sol de Corso dell' inanizione; ricerche Sperimentali;" *Archives per le Scienze Mediche*, Vol. V., p. 338.

Engaged with Luciani on experiments on inanition by the starvation of dogs.—*Archiv. per le Scienze Mediche*, Vol. V., p. 338.

"A very interesting contribution to the doctrine of inanition. The authors present a graphic table, indicating the quantity of hæmoglobin in the blood, the temperature, and, according to daily observations on a bitch subjected for 43 days to an absolute fast with the exception of one ration of water. At the last there were quick oscillations in the temperature . . . an interesting fact, which deserves to be confirmed by further experiments, which the authors engage to make. A second series of experiments was made on fasting dogs, on which every three days was practised the transfusion of blood."—*Archives Italiennes*, Tom. II., p. 253.

Burkart, Rudolph. M.D. Bonn, 1869.

Author of "Die physiologische Diagnostic der Nervenkrankheiten," Leipzig, 1875. Contrib. "Ueber den Einfluss des N. Vagus auf die Athembewegungen," *Pfuger's Archiv*, Vol. I., p. 107; "Studien ueber die automatische Thätigkeit des Athemcentrums, und ueber die Beziehungen derselben zum nervus vagus und anderen athemnerven," *Ibid*, Vol. XVI., p. 427.

The last-named article contains records of experiments on rabbits, such as inducing cramp through loss of blood, experiments with electricity on the nervus vagus dexter and nervus vagus sinister; the abdomen cut open to expose the action of the diaphragm. (In Exp. VII., after a continuation of the electrical excitement for 2h. 20m., the action of the diaphragm ceased.) Experiments on frogs are also recorded.

Cadiat (Dr.), 7, Rue du Bac, Paris. Agrégé Histol. Practical Courses.

Capparelli, A., M.D. Lab. Physiol. Turin.

Experiment on the bladders of dogs and rabbits. Some dogs under chloroform; others curarized.—Communicated to Academy of Medicine, Turin, June, 1882.

Cash, John Theodore. M.D. Edin. (Gold Medal), 1879. M.B. and C.M., 1876; M.R.C.S. England, 1876; (Edin., Berlin, Vienna, and Leipzig); Lab. St. Barthol., London.

Held a License for Vivisection at St. Bartholomew Hospital Medical School in 1880-81-82-83. Certificate for Illustrations of Lectures in 1882-83. No experiments returned in 1881. Dr. Cash can also perform experiments at the Physiological Laboratory, King's College, London, and at the Brown Institution, Wandsworth Road.

Cerradini, Giulio. Prof. Univ. of Genoa.

Chambard (Dr.), 97, Rue Saint-Lazare, Paris. Phys. Hosp. Mental Dis.

Charcot, Jean Martin, Paris. B. 1825. M.D. Paris, 1853; Phys. to La Salpêtrière; Prof. Med. Faculty, Paris; Mem. Acad. of Med., Director of "Archives de Physiologie."

Author of "De l'Expectation en Médecine," Paris, 1857; "De la Pneumonie chronique," Paris, 1860; "La Médecine empirique et la Médecine scientifique," Paris, 1867; "Leçons cliniques sur les maladies des vieillards et les maladies chroniques," Paris, 1868; "Leçons sur les maladies du système nerveux," 1873; "Leçons sur les maladies du foie; des voies biliaires et des reins," 1877; Joint Editor of "Archives de Physiologie." Contrib. "Galvanism and Hypnotism," Brit. Med. Journ.

Charles, T. W. Cranstoun, St. Thomas' Hospital, London, S.E. M.D. and M. Ch. (with 1st of 1st Honours and Gold Medal), Qu. Univ. Irel., 1869 (Belf., Dub., Lond., Paris, etc.); 1st Schol. Qu. Coll. Belfast, 1865-69; Fell. Roy. Med. Chir. Soc.; Mem. Path. Soc.; Lect. on Pract. Physiol. St. Thomas's Hosp. Med. Sch.; late Med. Regist. and Demonstr. of Physiol. St. Thomas' Hosp.; formerly Demonstr. and Asst. Lect. in Chem. Qu. Coll., Belfast. Contrib. "Medical Reports of St. Thomas's Hosp.," etc., etc.

Held a license for Vivisection at St. Thomas's Hospital Physiological Laboratory in 1878 and 1879. No experiments returned in 1879.

Chauveau, A., 22, Quai des Brotteaux, Lyons. Chef des Travaux d'Anatomie et de physiologie à l'école Vétérinaire de Lyons.

Author of "De l'excitabilité de la moelle épinière;" "Du nerf pneumogastrique," &c.

Describes his own experiments in Brown-Séquard's *Journal de Physiologie*. The object was "to ascertain the excitability of the spinal marrow, and the convulsions and pain produced by that excitability." His studies were made almost exclusively on horses and asses, who "lend themselves marvellously thereto by the large volume of their spinal marrow," and he "consecrated 80 subjects to his purpose." "The animal is fixed on a table; an incision is made on its back of from thirty to thirty-five centimetres; the vertebrae are opened with the help of chisel, mallet, and pincers, and the spinal marrow exposed." No mention of anæsthetics. Case 7. A vigorous mule. "When one pricks the marrow near the line of emergence of the sensitive nerves, the animal manifests the most violent pain. . . . Case 10. A small ass very thin, pricked on the line of emergence—*douleur intense*. Case 20. Old white horse lying on the litter, unable to rise, but nevertheless very sensitive. At whatever point I scratch the posterior cord, I provoke signs of the most violent suffering."—*Journal de Physiologie*, Vol. IV., No. XIII., p. 48.

Cheyne, Wm. Watson, 6, Old Cavendish Street, Cavendish Square, London, W. M.B. Edin., and C.M. (1st Class Honours), 1875; F.R.C.S., Eng. (Exam.) 1879; (Edin., Vienna, and Strasbourg); Syme Surg. Fell., 1877; Boylston Med. Prizeman and Gold Medallist, 1880; Jacksonian Prizeman, 1881; Fell. Roy. Med. Chir. Soc.; Mem. Path. Soc.; Asst. Surg., King's Coll. Hosp.; Demonstr. of Surg. King's Coll.; Late Surg. Regist., King's Coll. Hosp.; Demonstr. Anat.

Univ. Edin.; House Surg., Edin. Roy. Infirm. and King's Coll. Hosp., London.

Author of "Antiseptic Surgery, its Principles, Practice, History and Results," 1881; Art. "On the Antiseptic Method of Treating Wounds," *Internat. Encycl. Surg.* Contribs. to Brit. Med. Journ., and Lond. Med. Record, &c.

Held a License for Vivisection at King's College, London Physiological Laboratory, also Certificates Dispensing with Obligation to Kill in 1880-81-82-83.

"Two tubes of serum containing micrococci were obtained from M. Toussaint, who holds that micrococci are the cause of the disease. Toussaint obtains the organisms by inoculation of flasks containing serum, or infusion of rabbit with the blood of tuberculous animals; and he has in some cases succeeded in producing tuberculosis by the injection of these cultivations into other animals. The material obtained from M. Toussaint was injected into three rabbits, two guinea-pigs, one cat, and one mouse, and of these seven animals six were under observation for a sufficient length of time for the development at least of local tuberculosis. In no instance did tuberculosis ensue. (In all the experiments detailed in this report inoculation was made into the anterior chamber of the eye whenever this was practicable; syringes purified by heat were employed for the purpose.) Cultivations of these micrococci were also made, and injected into nine rabbits, and three guinea-pigs. Of these, four rabbits and three guinea-pigs were under observation for a considerable time without the development of tuberculosis in any case. The total result is that thirteen animals were inoculated with the micrococci with which Toussaint works, and obtained from Toussaint himself, and in no case did tuberculosis occur."—*Lancet*, March 17, 1883, pp. 444-5.

"*Experiment V., November 7th, 1882.*—Experiment with pus from the wound of a patient suffering from pyæmia. The pus was thick and foul smelling.

"1. One minim was injected *into the left eye* of a rabbit. Panophthalmos [inflammation of the eye, involving every part of it] resulted and the animal was ill for some time. It, however, gradually recovered, and in December was apparently well. It died on January 10th, 1883. Lived 64 days." (P. 267.)

"*Experiment XIV., November 2nd, 1882.*—The bacilli were rubbed up with boiled distilled water as usual. A little of the pure material was injected *into the right eyes* of three rabbits. Into the *left eyes* the following materials were injected:—

"No. 1.—One part of the fluid containing bacilli was mixed with one part of a 1 per 1,000 watery solution of bichloride of mercury. This mixture was allowed to stand for twelve minutes, and then injected into the left eye of No. 1.

"*Result in No. 1.*—On November 23rd, 1882, it was found there was a well-developed tubercular iritis [inflammation of the iris—the coloured part of the eye surrounding the pupil] in the right eye, but apparently nothing in the left. On December 10th, 1882, the left eye was beginning to show appearances of tubercular iritis; the right eye become converted into a caseous [cheese-like] mass. This animal died on January 7th, 1883. Lived 66 days." (P. 285.)—*"Report to the Association for the Advancement of Medicine by Research."*—*Practitioner*, April, 1883.

Chirone, Vincenzo. Prof. at Palermo.

Engaged with Curci in experiments on biological action of picrotoxine and cinchonidine.

Author of "Contribuzione sperimentale alla storia del Gloradio, Opuscolo," Napoli, 1870; "Manuale di Materia medica e di Terapia, compilato secondo gli ultimi progressi della scienza," Napoli, 1871—Presso V. Pasquale, nella R. Università; "Sul valore febbrifugo della chinina; studii sperimentali e clinici, Memoria di concorso, con medaglia di 1^a categoria dalla Facoltà medica di Napoli, 1872"—Presso l'Autore; "Se la dilatazione patologica del cuore avvenga durante la diastole, Lettera al Prof. L. Luciani (Lo Sperimentale)," 1873; "L'infezione malarica e l'azione della chinina nel Prf. Cantani. Considerazioni critiche (Lo Sperimentale)," 1873; "Meccanismo di azione della chinina sulla circolazione ed azione sulla fibra muscolare in generale. Esperienze eseguite nel laboratorio del Prof. A. Bernard nel Giardino della Pianta, in Parigi; " "Parte prima (Lo Sperimentale), 1874; parte seconda (Lo Sperimentale)," 1875; "Mécanisme de l'action de la quinine sur la circulation. Recherches experimentales, exécutées au Muséum d'Histoire Naturelle," Paris, 1875—Masson éditeurs; "Due parole sul nesso naturale tra le funzioni del pulmone e quelle del cuore. Lettera al Prof. F. Pacini (Lo Sperimentale)," 1874; "Due parole sull' iniezione nelle vene dell' idrato d'iodalis. Lettera al Prof. Cav. Carlo Ghinozzi (Lo Sperimentale)," 1875; "Ricerche sperimentali sull' azione biologica della ciclamina. Comunicazione preventiva (La Clinica)," 1876; "Azione comparativa degli alcool omologhi ottenuti per fermentazione. Lezione dettata nella R. Università di Napoli, raccolta e redatta da Gaetano Materazzo (Lo Sperimentale)," 1876; "La doppia attività muscolare e l'azione della chinina. Critica e sperimenti, Risposta ai Dott. A. Mosso e L. Pagliani (La Rivista clinica di Bologna)," 1876; "Due parole di risposta alla lettera dei Dott. A. Mosso e L. Pagliani (L'Osservatore, Gazzetta delle cliniche di Torino)," 1876; "Ricerche sperimentali sull' azione biologica della Ciclamina (Renditonto della R. Accademia delle Scienze fisiche e matematiche di Napoli, fasc. di giugno)," 1877; "Azione fisiologica della chinina sulla circolazione del sangue, Esperienze fatte nel laboratorio di Fisiologia dell' Università di Bruxelles" (1876), dal Dott. Leone Stiénon. "Rivista critica (Lo Sperimentale)," 1876; "La Scienza e l'arte del ricettare, manuale pratico per gli studenti, pei medici e pei farmacisti." Napoli, 1877, Presso l'Autore, L. 10; Collaborazione all' "Enciclopedia Medica Italiana," Articoli, Bettonica, Bezoardo, Bile, Brodo (monografia), Cainea, Calabar (Fava del), Calaguala, Calamo aromatico, Cammomilla, Campegio, Cedron, Cera, Cerato, Cerfoglio, Chelidonia, Chenopodio, Chermes animale, China (monografia), Chiodi di garofano, Cibozio, Cicoria, Circuta (monografia), Cioccolatte medicinali, Cloralio (monografia).

Chossat, Charles Etienne. B. 1796. M.D., Paris, 1820. Prof. Univ. Geneva. Mem. Soc. Nat. Geneva.

Author of "Recherches expérimentales sur l'inanition," Paris, 1843; "De l'Influence du système nerveux sur la chaleur animale," Paris, 1823.

" During all the operations, and in a great number of thermometrical observations, the animal has been placed upon its back, the fore and hind feet secured to make certain that the body should remain motionless. This position, which is extremely

convenient for the experimenter, is no doubt far less so for the animal experimented upon. . . . As Legallois had affirmed, probably from the results of his own experiments on rabbits, 'that by tying an animal down on its back its temperature may be sufficiently lowered so as even to cause death, if it is kept long enough in that position,' I thought I ought to repeat that experiment by prolonging its duration."—*Memoire sur l'Influence du Système Nerveux sur la Chaleur Animale*, Paris, 1820, pp. 11 and 12.

"After long and conscientious researches, M. Chossat concluded that the sympathetic nerve is the real heat-producing agent in animals. But if, after having cut the brain transversely in front of the pons varolis, after having suppressed all nervous action by a cerebral shock violent enough to cause death, after having cut both the pneumo-gastric nerves, after having made various sections of the spinal cord, after having dissected out the sympathetic nerve above the solar plexus, after having practised ligature of the aorta below the diaphragm; if after all this, the temperature of the animals submitted to these mutilations has been lowered and they have died, notwithstanding that pains were taken to keep up artificial breathing when natural respiration was becoming impossible, it cannot be right to affirm that these animals died from the effects of cold. In the experiments made by M. Chossat, the decreased temperature was evidently the consequence and not the cause of death."—Gavarret, *Art. "Chaleur Animale," Dict. des Sciences Médicales*, Vol. XV., 1874, p. 27.

"M. Chossat and M. Strelzoff (very recently) have made experiments on pigeons, turtle-doves, hens, guinea-pigs, rabbits, and cats, and have arrived at this result—that the animals die when they have lost in weight thirty per cent., that is to say, one-third of their original weight." . . . "M. Chossat subjected twelve animals to complete deprivation of food and drink, and abandoned them thus until they died. He examined them all every twenty-four hours at noon and at midnight."—Gavarret's "*Animal Heat*," p. 394.

Chudzinski (Prof.), Paris. Professor at the Institute of Anthropology.

Ciaccio (Prof.), Bologna. Scuola Veterinaria.

Ciniselli, Giuseppe. Prof. Pavia University.

Cleland, John, 2, The College, Glasgow. M.D. Edin., 1856; L.R.C.S. Edin., 1856; F.R.S.; Prof. of Anat. Univ. Glasgow; formerly Prof. of Anat. and Physiol. and Clin. Lect. Qu. Coll. Galway.

Author of "*Animal Physiology*," 1874; *Directory for the Dissection of the Human Body*," 1876. Contrib. to *Philos. Trans.* and various other papers.

Coats, Joseph, 7, Elmbank Crescent, Glasgow, N.B. M.D. Glasgow, 1870; M.B. (Honours), 1867; F.F.P.S. Glasg., 1872; (Univ. Glasg., Leipsig, and Wurzburg); Hon. Sec. Med. Chir. Soc. Glasg. and Glasg. Br. Brit. Med. Assoc.; Mem. (late Pres.) Path. and Chir. Soc., Glasg.; Lect. on Path. and Pathologist Glasg. Western Infirm.; Exam. in Path. Univ. Glasg.; Editor of *Glasg. Med. Journal*. Contrib. "*Arbeit des Herzens*," Ludwig's Arb., 1869;

"Results of some Injections of Kidneys in Bright's Disease," *Glas. Med. Journ.*, 1875, etc. etc.

Held a License for Vivisection at the University of Glasgow Physiological Laboratory 1878 and 1879; also in 1882 with Certificate dispensing with obligation to kill. No experiments in 1882.

Cocco-Pisano, Adolfo. Prof. Sassari University.

Cohnheim, Julius. B. 1839, at Demmin, Pomerania; d. Aug. 14, 1884. Leipzig University Path. Institute. M.D. Berlin (Univs. Berlin, Wurzburg, Greifswald, and Prague); Assist. to Virchow at Path. Inst. Berlin, 1864; Prof. Path. Anat. at Kiel, 1868; Prof. Path. Anat. at Breslau, 1872, where was founded under his direction a new Pathological Institute. Accepted the Professorship of Gen. Path. and Anatomy at Leipzig, 1876.

Author of numerous articles in Medical Journals, "Lectures on General Pathology," 1871; joint author with Dr. Anton von Schultheis Rechberg, of Zürich of "*Ueber die Folgen der Kranzarterienverschliessung für das Herz.*"

Made experiments, in conjunction with Prof. Roy (*whom see*) "to elucidate a number of questions bearing upon the relation which exists between certain diseases of the kidney and cardiac hypertrophy."

"If we now try to explain the striking phenomena which so invariably accompany our experiments, it is quite impossible not to conclude from the outset that they are the result of the closing of the coronary artery. It is quite true that less frequent beating of the heart, and even irregularities of the pulse, may occur spontaneously, and certainly without ligature of the coronary artery. Any one who has made frequent experiments on dogs in which the pressure of the blood has been noted down during a long period, knows very well that intermittent pulsation, and even greater irregularities, are not unfrequent occurrences in narcotised and bound or curarised animals—irregularities which disappear or re-appear, as the case may be. But the sudden ceasing of the diastolic beating of the heart may also occasionally be observed in dogs whose coronary arteries have not been touched. However, this only happens spontaneously (according to our experience) in dogs which have already been used for a long succession of experiments, which have resulted in the natural alteration of the action of the heart, and in whom the arterial pressure has been lowered to a great degree, more especially when for hours the thorax has been open, and experiments have been made on the greater vessels, or the functions of the heart, or on pericardial pressure, etc. . . . However, there can be no question that the manipulations of the heart, which are inseparable from our experiments, should be the cause of this result." . . . (Here M. Cohnheim makes this naïf remark), "Many observers have expressed surprise at the amount of pain which a dog's heart can bear!"—" *Ueber die Folgen der Kranzarterienverschliessung für das Herz,*" Virchow's *Archiv.*, Vol. 85, 1881, pp. 520-21.

"The great majority of our experiments were made on dogs under curari with artificial respiration, but several were under morphia; with rabbits there is no particular difficulty in dispensing with all narcotics."—Virchow's *Archiv.*

Colassanti, Joseph. M.D. Univ. Rome.

Author of "Researches on Uric Acid," *Atti della R. Accademia di Roma*, 1881; "Action of Oxygenated Water in Poisoning Dogs;" "Zur Kenntniss der Physiologischen Wirkungen des Curaregiftes," *Pflüger's Archiv.*, Vol. XVI., pp. 157-8, &c.

Made experiments with curare at the Physiological Institute at Bonn. ". . . For these experiments we used middle-sized dogs, with well developed muscles and little fat. The method of preparing them for the desired experiments was as follows:—The dog was fastened on to the vivisection table. The abdomen was opened by a long cut in the linea alba from the sternum to the symphysis oss. pub.; to the right and left of the linea alba the muscles of the skin and abdomen were cut across and separated, so as to leave space for the preparation of the aorta abdominalis and the vena cava ascendens. Both these vessels were dissected out of their sheaths, and the threads required for binding the canula passed under the artery. While the animal bleeds to death a canula, which is intended to supply defibrinised blood, is fixed into the aorta." . . .—"Zur Kenntniss der Physiologischen Wirkungen des Curaregiftes."—*Pflüger's Archiv.*, Vol. XVI., pp. 157-8.

Colin, Gabriel Constant. B. at Mollars, Haute Saône, 1825. Prof. Veterinary College, Alfort. Mem. Acad. of Med., Paris.

Author of "Expériences sur la secretion pancréatique chez les grands ruminants," 1851; "Traité de physiologie comparée des animaux," 1854-56; "Recherches sur une maladie vermineuse des moutons, due à la présence d'une linguïtale dans les ganglions mésentériques," 1861. Contrib. a number of articles to the "Recueil de Med. Vétérinaire;" "les Annales des Sciences Naturelles," "Les Comptes Rendus de l'Acad. des Sciences, &c."

"The following are experiments practised by Messrs. Boulay and Colin:—Starve a horse, make an open wound in the œsophagus, and inject thirty grains of alcoholic extract of nux vomica, or from three to four grains of strychnine. At the end of a quarter of an hour the horse will die in characteristic convulsions."—*Traité de Physiologie*, Béclard, p. 155.

Cornil, André Victor, 6, Rue de Seine, Paris. B. 1837. M.D. Paris, 1865, Prof. of Path. Med. Faculty; Physician to the Hospital de Lourcine.

Author of "Manuel d'histologie pathologique," 1869-72; "Leçons élémentaires d'hygiène," 1872; Editor (chief) of "Journal des Connaissances Médicales." Joint author with M. Ranvier of "Manuel d'Histologie Pathologique."

Corona, Augusto (Prof.) Director of Sassari University.

Corrado (Commandatore), Rome. Professor of Physiological Pathology Hospital of San Spirito.

Couty (Mons.), Rio Janeiro.

Coyne, Paul, M.D., Paris. Formerly Resident Hospital Physician. Prof. Med. Faculty, Lille. Director of the Laboratory of Histology of the Hospital La Charité, Paris.

Author of "Recherches sur l'Anatomie normale de la muqueuse des larynx et sur l'anatomie pathologique des complications laryngées de la rougeole," Paris, 1874. Contrib. to Gaz. Med. de Paris.

Cryan, Robert, 54, Rutland Square West, Dublin. F.K.Q.C.P. Irel., 1873; L. 1849; L.M. 1861; L.R.C.S.T. 1847 (Richm. Hosp., Carm. Sch. Dub. and Univ. Glasg.); Phys. St. Vincent's Hosp.; Prof. Anat. and Physiol. Cath. Univ.; M.R.T.A. Mem. Med. Soc., Coll. Phys. Irel., Sug. Soc. Irel. and Path. and Obst. Soocs. Dub.; late Lect. on Anat. and Physiol. Carm. Sch.

Author of various Contributions to Path. Soc. Dub.; *Dub. Quart. Journ.*, and *Med. Press and Circular*.

Held a License for Vivisection at the Physiological Laboratory of Catholic University, Dublin, in 1878, and Certificate for Illustrations of Lectures.

Cunningham, Daniel John, University, Edinburgh. M.D. Edin. (Gold Medal), 1876; M.B. and C.M. (1st Class Honours) 1874, Edin.; F.R.S., Edin.; Senior Demonstrator of Anat. (late Asst. and Junior Demonstr. of Anat.), Univ. Edin.; Lect. on Physiol. Roy. Vet. Coll., Edin.

Author of "Dissector's Guide," Parts I. and II. Contrib. several Articles to *Journ. Anat. and Physiology*, etc.

Held License for Vivisection at the Veterinary College, Clyde Street, Edinburgh, in 1878, 1879, 1880, 1881, and 1882. Certificates for Illustrations to Lectures in 1879, 1880, 1881, 1882. No experiments in 1878, 1880, and 1882.

Curci (Signor).

Engaged with Chirone in experiments on picrotoxine and cinchonidine.—*Archiv. Ital.*

Currie, Andrew Stark, Royal Infirmary, Edinburgh. M.B. Edin., 1874; M.R.C.S., Eng., 1874.

Held License for Vivisection at Glasgow University Physiological Laboratory, 1878.

Cyon, Elias de, 99, Boulevard Haussmann, Paris. Prof. Physiology Univ. St. Petersburg; Mem. Acad. of Med. St. Petersburg.

Author of "Die Lehre von der Tabes dorsalis kritisch und experimentelle erläutert," Berlin, 1867; "Principes d'électrothérapie," Paris, 1867; "Methodik der physiologischen Experimente und Vivisectionen, mit Atlas," Giessen, Leipzig, 1876; "Recherches expérimentales sur les fonctions des canaux semi-circulaires et sur leur rôle dans la formation de la notion de l'espace," Paris, 1878; Bibl. de l'École des Hautes Études, section des Sciences Nat., Vol. XVIII, Art 1—(Experiments on pigeons, dogs, rabbits, and lampreys made in the laboratory of Claude Bernard.)

Experimented in his private Laboratory at St. Petersburg in 1874; also in Ludwig's Laboratory at Leipzig; in his own Laboratory, and that of Claude Bernard, at Paris. To observe the action excited by barometrical pressure upon the organism, he placed animals in the iron cylinder invented by Paul Bert, but improved upon the latter in such a way that the arteries of the

animal were brought into communication with a manometer placed outside, and the nerves of the animal could be acted upon by an electric current.

.... "The effect of such a division of the semi-circular canals is appalling. It is impossible to convey any exact idea of the unceasing movements of the pigeon; it can neither stand, nor lie down, nor fly, nor perform any systematic movements whatever, nor retain for an instant even any position in which it may be placed. To keep alive pigeons which have been thus operated upon I have wrapped them in a napkin, so as to prevent even oscillations of the head. Thus pinioned I placed them in a hammock, specially constructed for pigeons having had the semi-circular canals severed. Notwithstanding these precautions, it has frequently happened that I have found the pigeons dead in a corner of the laboratory. So violent were the muscular contractions, that though enfolded in a napkin, the pigeons still managed to throw themselves out of the hammock, and roll on to the ground till fatal injuries to the brain ended their sufferings."—"Fonctions des canaux," etc.; *Bibl. de l'Ecole des Hautes Études, Section des Sciences Naturelles*, Vol. XVIII., pp. 45-46.

"The medical man who speaks with horror of the torture of animals in physiological experiments, will do well to remember how often he has prescribed most repulsive, and not always safe treatment for a patient, in order to obtain some insight into how it was likely to act. Many a surgical operation is performed, *less for the benefit of the patient than for the service of science*; and the utility of the knowledge aimed at thereby is often *much more trifling* than that attained by Vivisection of an animal."—*Methodik*, p. 8.

"The true vivisector must approach a difficult vivisection with the same joyful excitement, with the same delight, with which a surgeon undertakes a difficult operation, from which he expects extraordinary consequences. He who shrinks from cutting into a living animal, he who approaches a vivisection as a disagreeable necessity, may very likely be able to repeat one or two vivisections, but will never become an artist in vivisection. He who cannot follow some fine nerve-thread, scarcely visible to the naked eye, into the depths, if possible sometimes tracing it to a new branching, with joyful alertness for hours at a time; he who feels no enjoyment when at last, parted from its surroundings and isolated, he can subject that nerve to electrical stimulation; or when, in some deep cavity, guided only by the sense of touch of his finger-ends, he ligatures and divides an invisible vessel—to such a one there is wanting that which is most necessary for a successful vivisector. The pleasure of triumphing over difficulties held hitherto insuperable is always one of the highest delights of the vivisector. And the sensation of the physiologist, when from a gruesome wound, full of blood and mangled tissue, he draws forth some delicate nerve-branch, and calls back to life a function which was already extinguished—this sensation has much in common with that which inspires a sculptor, when he shapes forth fair living forms from a shapeless mass of marble."—*Methodik*, 1876, p. 15.

"The description given by Cyon of the method of operation (*Methodik*, p. 510) is as follows: 'The rabbit is firmly fastened to the ordinary vivisection table by means of Czermak's holder. Then

the rabbit's head is held by the left hand, so that the thumb of that hand rests on the condyle of the lower jaw. This is used as a *point d'appui* for the insertion of the knife. . . . To reach the hollow of the temple the instrument must be guided forward and upward, thus avoiding the hard portion of the temporal bone and leading the knife directly into the cranial cavity. . . . The trigeminus then comes under the knife. Now holding the head of the animal very firmly, the blade of the knife is directed backwards and downwards, and pressed hard in this direction against the base of the skull. The nerve is then generally cut behind the Gasserian ganglion, which is announced by a violent cry of agony (*einen heftigen Schmerzensschrei*) of the animal.' "

"When I published my treatise on physiological methods and the art of vivisection four years ago, several of my colleagues of the English Universities entreated me not to announce my work in any of the English newspapers, as they feared that public opinion might be still more aroused."—Letter to the *Gaulois*, December, 1881.

Czermak, Johann Nepomuk. B. at Prague in Bohemia, 1828; Med. and Chir. Doct.; formerly Prof. Univs. Cracow and Pesth; Prof. Univ. Prague, 1860; Prof. Physiol. Univ. Jena, 1865; Prof. Univ. Leipzig, 1870; founded Physiological Laboratories in each of the above Universities; inventor of the laryngoscope, and also of several instruments for securing animals during vivisection.

Author of "Beschreibung einiger Vorrichtungen zu physiologischen Zwecken," Vienna, 1865; "Nachweis der Erscheinung der sogenannten Pulsverspätung beim Frosche, und das Verfahren derselbe wahrzunehmen," Vienna, 1865; "Populäre physiologische vorträge gehalten im akademischen Rosensaale zu Jena," 1867-1869; "Die Physiologie als allgemeines Bildungselement," Leipzig, 1870; "Ueber Schopenhauer's Theorie der Farbe," Vienna, 1870; "Der electrische Doppelhebel," Leipzig, 1871; "Ueber das Herz u. den Einfluss des Nervensystems auf dasselbe," Leipzig, 1871; "Nachweis echter hypnotischen Erscheinungen bei Thieren," Vienna, 1873; "Ueber das Ohr und das Hören;" "Ueber das physiologische Privat-Laboratorium an der Universität Leipzig," Leipzig, 1873.

Darèste, Camille, 37, Rue de Fleurus, Paris. M.D. Paris, 1847; Prof. Nat. Hist., Lyceum of Versailles; Prof. Zool., Fac. Sci. Lille, 1864; Direct. of Lab. of Teratology Med. Fac., Paris.

Author of "Recherches sur la production artificielle des monstruosités ou Essais de tératogénie expérimentale," 1877 (with maps). M. Darèste has made a special study of Animal Monstrosities, and articles by him on this subject have appeared in several journals, including the "Comptes Rendus of the Académie des Sciences."

Dastre (Prof.), Paris. D. Sc.; Prof. Nat. Hist. Lycée Louis le Grand; Prof. (Suppléant) of Physiol. Fac. Sci.; Prof. of Physiol., La Sorbonne, Paris.

Has translated from the English "Des lésions des nerfs et leurs conséquences," by Dr. Weir-Mitchell; Edited "Chaleur Animale," by Claude Bernard.

Davidson, Alex. Dyce, 224, Union Street, Aberdeen. M.A. Aberd., 1863; M.D. 1870; M.B. and C.M. (both with highest Honours), 1866; M.R.C.S. Eng., 1866; (Univ. Aberd. and Paris); Lect. on

Oph. Surg. and Ophthalmoscopy Univ. Aberd. ; Oph. Surg. Roy. Infirm. Aberdeen ; Surg. Aberd. Oph. Inst. Blind Asyl., and Female Orphan Inst. ; Professor of Materia Medica Univ. Aberdeen ; Phys. Hosp. for Incurables. Contrib. several Papers, etc., to *Annales d'Oculistique* and other journals.

Held License for Vivisection unrestricted as to place in 1878, also in 1881-82-83. Certificate for Experiments without Anæsthetics in 1878; Certificates for Illustrations of Lectures in 1881-82-83.

Davison, James, 45, Sandy's Terrace, South Circular Road, Dublin. M.D. Qu. Univ. Ireland, 1869 (Belfast and Dublin).

Held License for Vivisection at Physiological Room, Royal College of Surgeons, Ireland, and 45, Sandy's Terrace, Dublin, 1881, and at the Laboratory, Drimatergh House, Queen's County, 1883.

Deahna, Dr. A. Prof. Physiol. at Freiburg, in Bresgau ; Phys. on Staff of Saxon Sanitary Corps, 1879.

Joint author (with Dr. Joh. Latschenberger) of "Beiträge zur Lehre von der reflectorischen Erregung der Gefässmuskeln," *Pflüger's Archiv*, Vol. XII., p. 157.

Experiments on rabbits, dogs, and cats. The animals were all curarised, and had various nerves cut and excited by electricity.

De Paoli, Giovanni. Prof. Genoa University.

Descoust (Dr.), 16, Rue Hérold, Paris. Prof. of Pract. Med. Jurisp. Med. Faculty.

Desfossez (Dr.), Boulogne-sur-Seine. Phys. Hosp. Ophthalmology.

Desgranges (Dr.), 55, Place de la Republique, Lyons. Prof. of Surgery Med. Faculty.

Dittmar, Carl. M.D. 1867, Phys. at Hildesheim ; Mem. of Acad. of Sci. of Saxony.

Author of "Ueber die Lage der sogenannten Gefässnervencentrums in der Medulla oblongata;" "Ein neuer Beweis für die Reizbarkeit der centripetalen Fasern des Rückenmarks" (Ber. der Sächs. Gesellschaft d. Wiss., 1870).

Donders, Frans-Cornelius. B. 1818. Studied at the Military Medical School of Utrecht. Was Military Surgeon at the Hospital of Hague. Professor of Physiol., Histol., and Ophthalmol. at the University of Utrecht, 1847. In 1863 received from his Government a grant of money for the construction of a modern Physiological Laboratory, which was inaugurated 1867. Corr. Mem. Academy of Medicine, Paris, 1873, and Institute of France, 1879.

Author of "Lehre von den Augenbewegungen," 1847; "Onder Zockingen gedaan in het physiologisch laboratorium," etc., Utrecht, 1849, 1857, 1867, etc.; and of several articles in Graefe's "Archiv. für Ophthalmologie."

"M.M. Snellon and Donders took a rabbit, cut the nerve on the right side of the cervical region, made a wound in each ear, and inserted a fragment of glass into the sore, which was then sewn up. At the end of six days a tumour was set up in the left ear. At the end of twelve days the wound on the right ear was opened by tearing its borders. . . . In the other ear meanwhile the swelling had considerably increased, and a vast purulent abscess was formed in its interior. . . . Here are

some more curious results. Cut the right nerve in the neck of a rabbit, and when the vessels of the globe of the eye are dilated pour concentrated acetic acid on both eyes. The sight is instantly violently distressed; the epithelium being cauterised soon becomes detached, . . . and at the end of four weeks the pupil of the eye can no longer be seen."—*Traité de Physiologie*, Bécclard, 1862, p. 1,019.

Dowdeswell, George Francis, Physiol. Lab. New Museum, Oxford. M.A., F.C.S., F.R.S., &c.

Contrib. "On the structural changes which are produced in the liver under the influence of the Salts of Vanadium," "Journal of Physiology," Vol. I., Nos. 4 & 5, p. 257.

Held License for Vivisection at Brown Institution, and University College Physiological Laboratory in 1878-79-80; also at Cambridge University Physiological Laboratory, besides former places in 1881-82-83. Certificates for Experiments without Anæsthetics in 1878 and 1879; Certificate Dispensing with obligation to kill in 1880; Certificates for Experiments without anæsthetics, and for Experiments on Cats, Dogs, Horses, Mules, and Asses in 1881-83, and Certificates for Illustrations of Lectures, and for Experiments on Cats, Dogs, Horses, Mules, or Asses in 1882. No Experiments returned in 1878, 1879, and 1880. No Experiments on Horses, Mules, or Asses.

Du Bois Reymond, Emil. B. Berlin, 1818. Studied Geology at Bonn; Anatomy and Physiology at Berlin under J. Müller; Ph. D. 1843 (Bonn and Berlin); Prof. Physiol. Univ. Berlin (successor to J. Müller), 1858; Mem. and Perpetual Sec. of Imp. Acad. of Science, Berlin, 1867.

Author of "Untersuchungen ueber thierische Electricität," Berlin, 1848, etc.; "Ueber Thierische Bewegung," Berlin, 1851; "Ueber die Grenzen des Naturerkennens," Leipsig, 1872; "Abhandlungen über allgemeine Muskel und Nervenphysik, 1877; "Der physiologische Unterricht sonst und jetzt," Berlin, 1878; "Culturgeschichte und Naturwissenschaft," Leipsig, 1878. Since 1857, co-editor, with Reichart, of Müller's Archives of Anatomy.

In 1841 he experimented on animal electricity, and published the results in "Poggendorf's Annals" (1843).

It was Du Bois Reymond who said: "Standing on the loftiest summit of Doubt, the man of science bravely disdains to fill the yawning desert around him with phantoms of his imagination. He looks without terror into the merciless machinery of Nature, utterly devoid as it is of any spark of Deity."—*Dr. Nordwall's Address to Scandinavian League*, 1883.

Du Castel (Dr.), 14, Rue de Bellechasse, Paris. Phys. Hospital, Teuon.

Durham, Arthur Edward, 82, Brook Street, W. F.R.C.S. Eng. (Exam.), 1860; M. 1858 (Guy's) 1st M.B. 1857; Prizem. 1854, Univ. Lond.; F.L.S., F.Z.S.; Fell. Roy. Med. Chir. Soc.; Chairm. Bd. of Exam. R.C.S. Eng.; Mem. Path. Clin. and Hunt. Socs.; Surg. and Lect. on Surg.; late Lect. on Anat. and Lect. on Use of Microscope, Guy's Hosp.; Con. Surg. St. Alban's Hosp. and Disp.; late Demonst. of Anat., Lect. on Nat. Philos., and Surg. Regist. Guy's Hosp.; late Pres. Quekett Micros. Club.

Late Editor Guy's Hosp. Reps.; Author of "Sleeping and Dreaming," an Essay on Physiological Science; "The Physiology of Sleep," etc.

" . . . It occurred to me that the artificial exposure of the brains of living animals might afford opportunity for more definite observation and further inquiry. With this idea I made numerous experiments and observations. . . . It was suggested to me that the perforation of the skull placed its contents in an unusual condition with regard to atmospheric pressure, and that thus an unnatural state of the circulation might be induced. . . . To obviate this and other possible objections, I replaced the portions of bone removed by accurately fitting watch glasses, and rendered the junction of their edges with the bone air-tight, by means of inspissated Canada balsam. . . . I satisfied myself of the accuracy of these observations by repeated experiments upon different animals. My experiments upon dogs were the most satisfactory; those upon rabbits least so."—From "*Physiology of Sleep*," Guy's Hospital Reports, Vol. VI., 1860, p. 153, &c.

"The method employed by Donders and Ehrmann was the same as that employed by Durham in the experiments he made upon animals to verify the observations of Blumenbach, Caldwell, and others, on human patients." . . . "The results obtained by physiological experimentation, to prove that sleep is accompanied by cerebral congestion, according to some, and according to others by cerebral anemia, are not more valuable than the results of clinical observation. Firstly, the animals upon which the experiments have been made have been wounded more or less severely, and thereby both excitement and pain have been caused; all have, therefore, necessarily been placed under pathological conditions. It is impossible to wound the head and open the skull without causing a severe shock to the system of the animals, and a more or less violent irritation of the brain; that is to say, not without producing a certain amount of pain. And we know the influence that pain can have, not only on the functions of the great organic apparatus (circulation, respiration, animal heat), but also on the anatomical and physiological state of the nerve centres. Another influence which, according to our idea, very considerably diminishes the value of the results of physiological investigation, is that sleep has always been produced by narcotics and anæsthetics in the animals submitted to experimental observations." . . . "We conclude from this study that the real state of cerebral circulation, during natural sleep, does not seem to have been arrived at, notwithstanding the great number of observations and experiments lately made on this interesting subject."—DR. MARVAUD, *Gazette Medicale de Paris*, 1878 (p. 81-2).

Eckhard, C. M.D. Prof. Univ., Giessen.

Author of "Beiträge zur Anatomie und Physiologie," Giessen; "Die Bildung und Prüfung des Arztes;" "Experimental physiologie des Nervensystems;" "Lehrbuch der Anatomie des Menschen."

"It is known that there is no unity of opinion amongst the observers of the phenomena which occur during artificial respiration in animals poisoned by strychnine, and that furthermore those who agree about the facts insist upon giving these different meanings."—"Ueber den Strychnintetanus während der Künstlichen Respiration," "Beiträge," p. 37.

"Expansion of the walls of the chest and abdomen by injection of gas into the lungs. First I cut away so much of the larynx through the open mouth of a frog that the animal can no longer close it at will. Then I sew the under jaw firmly to the upper jaw. I stop up the one nostril by forcing into it a short thick piece of wire. Then a similarly short and thick canula which is in communication with the gasometer is fixed into the other nostril. As soon as the frog shows symptoms of strychnine cramps, its lungs are set in communication with the gasometer by opening the tap; a side offshoot of the tube leads to the hdrg. manometer."—*"Strychnine, &c."* p. 48.

Eichhorst, Hermann. M.D.; Prof. Clin. Med., Univ. of Göttingen.

Author of "Handbuch der speciellen Pathologie und Therapie für practische Aertzte und Studirende;" "Die trophischen Beziehungen der Nervi vagi zum Herzmuskel," in *Centrbl. f. d. Med. Wiss.*, 1879; "Lehrbuch der Physikalischen Untersuchungs-Methoden innerer Krankheiten," Brunswick, 1881; "Ueber Nerven-degeneration und Nervenregeneration," *Archiv. für path. Anat.*, Vol. LIX., 1874, p. 7.

Made experiments on birds.

Ellenberger (Prof.) Prosector Veterinary Sch., Berlin.

"Professor Ellenberger, of Dresden, cut through the facial nerves of five old and emaciated horses. In the fifth it is stated 'that it showed signs of considerable pain during the operation.' The others were apparently so exhausted that even this operation made little impression on them. Claude Bernard once made the same operation on a horse, and gave as the result that the nostrils are no more capable of opening, and thus the animals die of suffocation, since they breathe only through the nostrils. This explanation has been hitherto accepted but is now disputed by Ellenberger, who maintains that there is no danger for animals so operated on if kept quiet, but only if they exert themselves, and he recommends if paralysis of these nerves occurs, as is not unfrequently the case, that one shall leave the cure to natural means."—*Archiv. f. Thierheilkunde*, vii., 4.

Emery, C. Prof. of Zoo., Univ. Bologna.

Joint editor, with A. Mosso, of "*Archives italiennes de Biologie*," Paris, 1882, &c.

Studies on the kidneys of fishes.

Engelhardt, Gustav (Dr.) Prof. at Nuremberg.

Author of "Beiträge zur Lehre von den Bewegungen der Iris," in "Untersuchungen aus dem Physiologischen Laboratorium in Würzburg," 1869, p. 308.

Experiments on the eyes of rabbits.

Engelmann, Theodor W. Prof. at Utrecht.

Author of "Physiologie des Ureters," "Beiträge zur Physiologie des Protoplasma," *Pfüger's Archiv*, Vol. II., "Beiträge zur allgemeinen Muskel und Nerven Physiologie," *Pfüger's Archiv*, Vol. III.; "Zur Anatomie und Physiologie der Flimmerzellen," *Pfüger's Archiv*, Vol. XXIII., 1880; "Ueber Reizung Contractilen Protoplasmas durch plötzliche Beleuchtung," *Onderzack, Physiol.*

Lab. Utrecht, 1880; "Ueber die Bewegungen der Oscillarien und Diatomeen," *Ibid*; "Ueber Degeneration von Nervenfasern, Ein Beitrag zur cellular physiologie," *Pflüger*, Vol. XIII., p. 474.

Experiments with electricity on the exposed ureters of rabbits; also on curarized frogs.

Ercolani, Count Giovanbattista. B. at Bologna, 1819. Prof. at the Veterinary Institute of the University of Bologna. Perpetual Secretary of the Academy of Sciences of the Institute. Member of many learned Societies, and of the Institute of France. Exiled from Florence for political causes he repaired to Turin, where he devoted himself to scientific studies and experiments, Director of the Veterinary School of San Salvario. Rector of the Univ. of Bologna from 1868 to 1871, &c., &c. Mem. Inst. of Rome, and of Acad. of Berlin and St. Petersburg.

Author of "Sulla Trasformazione degli Elementi Istologico Nell' Organismo Animale," Bologna, 1864; "Metamorfosi delle Piante," Bologna, 1878, &c., &c.

Erichsen, John Eric, 6, Cavendish Place, W. F.R.C.S., Eng. (Exam.), 1845, and Mem. Council (Univ. College); F.R.S.; Mem. various Socs. home and foreign; Surg. Extraordinary to H.M. the Queen; Emerit. Prof. of Surg. and Clinical Surg., Univ. Coll.; Cons. Surg., Univ. Coll. Hosp.; late Exam. in Surg., Univ. Lond., Roy. Coll. Phys., Lond. Roy. Coll. Surg., and Univ. Durham; late Pres. R.C.S., Eng., and Roy. Med. and Chir. Soc.

Author of "Science and Art of Surgery," 8th Edit.; "Pathology and Treatment of Asphyxia," 2nd Edit. for which the Roy. Humane Soc. awarded the Fothergill Gold Medal, value 50 guineas; "A Practical Treatise on the Diseases of the Scalp;" "Observations on Aneurism, &c." (Sydney Society); "Railway Injuries of the Nervous System," 1868; "Hospitalism and the Causes of Death after Operations and Surgical Injuries," 1874; "Concussion of the Spine," 2nd Edit., 1882. Contrib. various papers on surgical subjects to *Lancet*, *Med. and Chir. Trans.*, *Med. Gaz.*, and *Edin. Med. Surg. Journal*.

"Experiment 9. Three mongrel terriers, A, B, C, were properly secured. . . . One of the jugular veins of the centre dog was then exposed, and a ligature was passed under it, so that it might be punctured so as to avoid the occurrence of plethora and apoplexy when the carotid arteries of the two lateral dogs were connected with the corresponding vessels of the central one. . . . The central dog began to struggle. . . . The lateral dogs were both alive, but evidently enfeebled by loss of blood.'"—*Edinburgh Medical and Surgical Journal*, Vol. LXIII., Art. 1, "An experimental Inquiry into the Pathology and Treatment of Asphyxia," by John E. Erichsen.

Esbach, Dr., 6, Place de Valois, Paris. Lab. Hosp. de Necker.

Ewart, J. Cossar, Univ., Edin. M.D. Edin. (Gold Medal), 1878; M.B. and C.M. (Honours), 1874; F.R.C.S. Edin., 1878; Regius Prof. of Nat. Hist. Univ. Edin.; Director Scott. Zool. Station; formerly Demonstrator of Anat. Univ. Edin.; Conserv. Mus. Univ. Coll. London, and Lecturer on Anat., Edin. Sch. of Med.

Author of "Manual of Pract. Anat.," Part 1, 1879. Contrib. *Journ. Anat. and Physiol. Proc. Roy. Soc.*, etc., etc.

Held License for Vivisection at Aberdeen University; Physiological Laboratory, and Materia Medica Department, Marischal College, in 1881 and 1882. Certificates for Experiments without Anæsthetics 1881 and 1882. No Experiments returned in 1882.

Exner, Sigismund. Asst. Prof. at the Physiol. Inst. Vienna.

Author of "Zur Lehre von den Gehörsempfindungen," Pflüger's *Archiv*, Vol. XIII., p. 228.

Falchi (Dr.) Chef de Clinique Ophthalmogique, Turin.

Very numerous experiments, injecting tubercular matter into the eyes of animals.

Fano, J., M.D. Free Prof. and Asst. in Physiol. Univ. Florence.

Author of "Recherches expérimentales sur un nouveau centre automatique dans le tractus bulbo spinal," *Arch. Ital. de Biol.*, 1883, Vol. III., p. 365.

Experiments on turtles, toads, and fishes.

"On turtles alone I have made more than fifty experiments. The experiments on fishes I have only just commenced, and they do not allow me to draw from them any valid conclusions on the subject. My attempts to extend my researches to the superior vertebrates—that is to say, to mammals and birds—are limited to two experiments on unweaned puppies and one experiment on a pigeon."—*Arch. Ital. de Biol.*, Vol. III., 1883, p. 367.

Fayrer, Sir Joseph, K.C.S.I., 53, Wimpole Street, Cavendish Square, W. M.D. Edin., 1859; F.R.C.P. Lond., 1872; F.R.C.S. Edin., 1858; F.R.C.S. Eng., 1878; M. 1847; LL.D. Edin., 1878; F.R.S. Lond. and Edin.; F.R.G.S. Lond.; Vice-Pres. Zool. Soc., Lond.; Pres. Epidem. Soc. Lond.; Fell. Med. Soc. Lond.; Fell. Roy. Med. Chir. and Obst. Socs., etc.; Mem. (late Pres.) Asiat. Soc. Bengal; Fell. Acad. Sci. Philadelph.; Hon. Phys. to H.M. the Queen and to H.R.H. the Prince of Wales; Phys. to H.R.H. the Duke of Edinburgh; Phys. to Sec. of State for India in Council; Pres. Med. Board, India Office; Mem. Army Sanit. Commiss.; Mem. Senate Army Med. Sch., Netley; late Prof. Med. Coll. and Sen. Surg. Med. Coll. Hosp. Calcutta; late Pres. Med. Fac. Univ. Calcutta; Member of the Association for the Advancement of Medicine by Research.

Author of "Clinical Surgery in India," 1866; "Clinical and Pathological Observations in India," 1873; "On the Physiological Action of the Poison of Najatripudians, and other Venomous Snakes (conjointly with Dr. L. Brunton)," etc. etc.

Held a License for Vivisection at St. Bartholomew's Hospital Medical School, also unrestricted as to place, in 1878. Certificates for Experiments without Anæsthetics and for Experiments on Cats, Dogs, Horses, Mules, or Asses in 1878. No Experiments on Horses, Mules or Asses.

"The experiments, of which this is a summary, were commenced in October, 1867, and have been continued as regularly since, at such intervals as time and other and more important avocations permitted. . . . The living creatures experimented on have been the ox, horse, goat, pig, dog, cat, civet, mongoose, rabbit, rat,

fowls, kites, herons, fish, innocent snakes, poisonous snakes, lizards, frogs, toads, snails."—"Summary of Experiments on Snake Poison," by J. Fayrer, M.D., C.S.I., *Med. Times*, April 1st, 1871, p. 374.

"After careful consideration, fully admitting that in permanganate of potash we have an agent which can chemically neutralize snake-poison, I do not see that more has been done than to draw attention to a local remedy already well known as a chemical antidote, the value of which depends on its efficient application to the contaminated part (which Dr. Wall has pointed out is too uncertain to be reliable). We are still, then, as far off an antidote as ever, and the remarks made by me in 1868 are as applicable now as they were then. They were as follows:—'To conceive of an antidote, as that term is usually understood, we must imagine a substance so subtle as to follow, overtake, and neutralise the venom in the blood, and that shall have the power of counteracting or neutralising the poisonous or deadly influence it has exerted on the vital force. Such a substance has still to be found, nor does our experience of drugs give hopeful anticipations that we shall find it.'"—Sir J. Fayrer, "Address to Medical Society of London," *British Medical Journal*, Feb. 2, 1884.

Fede, Francesco. Prof. Naples University.

Fehleisen, F. M.D.; Private Lecturer Clinical Institute Berlin, 1877.

Author of "Die Aetiologie des Erysipels," Berlin, 1883.

"The beautiful experiments of Fehleisen, on erysipelas, have definitely established the fact that this disease is due to the growth of micrococci in the lymphatic vessels of the skin. He succeeded in cultivating these organisms in gelatinised meat-infusion, and inducing the disease by the cultivated micrococcus in rabbits, and also in man."—*British Medical Journal*, Dec. 29th, 1883, p. 1208.

Feltz (Prof.) Nancy Med. Faculty; Prof. Path. Anat. and Physiol. Med. Fac., Nancy.

Ferrari, Italo. Assist. Prof. at the Physiol. Lab. Univ., Parma.

Ferrier, David, 16, Upper Berkeley Street, Portman Square, W. M.D. Edin., 1870; M.B. and C.M. (Highest Honours), 1868; F.R.C.P. Lond., 1877; M. 1872; M.A. Aberd. (Double First), 1863; LL.D. (Edin. and Heidelberg); F.R.S.; Corr. Mem. Soc. Clin., Paris; Accad. Reale de Med., Turin; Lauréat de l'Institut de France, 1878; Prof. Forensic Med. King's Coll.; Asst. Phys. King's Coll. Hosp.; Marshall Hall Prizem., 1863; Prof. of For. Med. King's Coll.; Phys. Nat. Hosp. for Paralyse and Epileptic, etc.; Lecturer on Physiol. Middlx. Hosp. Med. Sch. and Exam. For. Med. Univ. Edin. and Univ. Lond.

Author of Gold Medal Thesis on "The Comparative Anatomy of the Corpora Quadrigemina," 1870; "Experimental Researches in Cerebral Physiology and Pathology," W. Rid. Med. Reps. 1873; "The Localisation of Function in the Brain;" "Experiments on the Brain of Monkeys," (Croonian Lecture), Phil. Trans., Part II., 1875, etc., etc. Joint Author of "Guy's Forensic Medicine;" "The Functions of the Brain;" Gulst. Lects. on Localisation of Cerebral Disease; Joint Editor of "Brain," and author of various Papers therein.

Held a License for Vivisection at King's College Physiological Laboratory, in 1882-83, with Certificate dispensing with obligation to kill in same years.

Made experiments at Wakefield in regard to the examination of various parts of the skull.—*Ev. Roy. Com.*, p. 169.

(Q. 3326.) "I should allow everybody liberty to perform experiments in his own private laboratory. A great many experimenters live in the country, and have no access to a public laboratory, and that would entirely prevent them from carrying on research.—(3327.) Do you think that there are many such persons? Yes.—(3328.) And who are practising in their own laboratories, and unconnected with medical schools do you mean? I used to do so when I lived in the country, in Suffolk, at Bury St. Edmunds. I performed experiments there for my own purposes of research."

* * * * *

(3331.) "Then you experiment at your own house as well as at King's College, do you? Yes; it would interfere with my professional work if I were obliged to go such a distance from home to perform my experiments."—*Ibid*, p. 173.

(3245.) "Now with regard to original research, how would you express yourself on that subject? I should say, that, wherever it is possible to avoid the infliction of pain on animals subjected to experiments, the means should be adopted either by chloroform or ether, or opium or other anæsthetic; but that where the administration of an anæsthetic would prejudice the object for which the experiment was conceived, that the experiment is still justifiable, notwithstanding the fact that it might inflict a certain amount of pain on the animal."—*Ibid*, p. 170.

"The interest attaching to the discussion was greatly enhanced by the fact that Professor Ferrier was willing to exhibit two monkeys which he had operated upon some months previously. . . . In striking contrast to the dog were two monkeys exhibited by Professor Ferrier. One of them had been operated upon in the middle of January, the left motor area having been destroyed. There had resulted from the operation right-sided hemiplegia" (paralysis of the right half of the body) "with conjugate deviation of the eyes and head" (eyes and head permanently twisted). "Facial paralysis was at first well marked, but ceased after a fortnight. From the first there had been paralysis of the right leg, though the animal was able to lift it up. The arm it never had been able to use. Lately, rigidity of the muscles of the paralyzed limb had been coming on. The other monkey, as a consequence of paralysis of all auditory centres, was apparently entirely unaffected by loud noises, as by the firing of percussion caps in close proximity to the head."—*Lancet's Report of the Proceedings at the International Medical Congress*, Oct. 8, 1881.

"Exper. IV., June 18th, 1873.—The right hemisphere of a monkey had been partially exposed and experimented on for the purpose of localising the region of electric stimulation. The part exposed included the ascending parietal and postero-parietal convolutions, the ascending frontal, and the posterior extremities of the three frontal convolutions. After having been under experimentation for eight hours, the animal recovered sufficiently to sit up and take food. The wound was sewn up, and the animal placed in its cage.

"June 19th.—The animal is apparently as well as ever, eating and drinking heartily, and as lively and intelligent as before. No change was perceptible during the whole of this day.

"June 20th.—The wound was oozing, and the animal was less active; but there was no diminution of sensation or voluntary motion. It closely watched flies buzzing about, and frequently made attempts to catch them. Towards the afternoon it began to suffer from choreic spasms of the left angle of the mouth and of the left hand. There was no loss of consciousness. The animal was apparently annoyed by the spasmodic actions of its mouth, and frequently endeavoured to still them by holding its mouth with the other hand. Towards the close of the day the spasms frequently repeated, became more intense, and exhibited an epileptic nature, the convulsions on the left side of the body becoming general. This state continued till . . .

"June 23rd.—* * * * *

"June 24th.—Hemiplegia is complete on the left side, hand, foot, and face. The animal moved by means of its left limbs, dragging the right after it.

"The animal died from exhaustion on the 27th."—*Croonian Lecture*, "*Experiments on the Brain of Monkeys*," Philos. Trans., 1875, pp. 441-42.

"Exper. XVI., Feb. 5th, 1875.—This, though not successful as regards the object intended, yet presents some interesting phenomena. The left occipital lobe was exposed posteriorly, and penetrated at the posterior extremity of the superior occipital fissure by means of hot wires, which were directed with a view to follow the inner aspect of the temporo-sphenoidal lobe. There was no hæmorrhage from the sinus. During the operation, the animal was observed to make sighing respiration. The operation was finished at 4.30 p.m. The animal lay in a state of stupor for more than an hour, only making slight movements when disturbed, and then with its left limbs.

"7 p.m.—The animal lies quiet, but indicates consciousness by grunting discontentedly when moved. Struggles with its limbs, chiefly the left, but occasionally with the right. On testing the cutaneous sensibility with the hot iron, reaction was decisive over the whole of the left side, but quite abolished in the right. The animal occasionally opened its right eye, but the left remained permanently closed. The animal passed into a state of coma, and was found dead at 11.30 p.m. The following experiment is a repetition of the last, and was only partially successful."—*Ibid.*, p. 464.

"These ganglia (corpora quadrigemina) were subjected to experimentation in the following seven cases, viz., V., VI., VIII., IX., X., XII., XIII., with the results:—

"V. In this case the exploration was not sufficiently definite, as the exact position of the electrodes was not observed, and death occurred before a more careful exploration could be made. The application of the electrodes to the ganglia on the left side, caused the animal to utter various barking, howling, or screaming sounds of an incongruous character. The head was drawn back and to the right, and the right angle of the mouth was strongly retracted while the stimulation was kept up. The tail was raised and the limbs were thrown into contortions, but nothing further was ascertained as the animal died from hæmorrhage."—*Ibid.*, p. 429.

"Experiments on the lower animals, even on apes, often lead to

conclusions seriously at variance with well-established facts of clinical and pathological observation . . . The decisive settlement of such points must depend mainly on careful clinical and pathological research . . . Experiments have led to different views in different hands."—Ferrier (*Functions of the Brain*, Preface).

"Physiological experiments conducted in these regions are most indefinite. The usual plan of investigation, viz., that of applying stimuli to the brain substance, leads either to negative results, or, if electrical stimulation is used, to results which, owing to the unavoidable dispersal of the currents in numerous directions, are not sufficiently localised to form the basis for trustworthy conclusions. In place of exact observations after section and stimulation of different regions, we have here the far less refined method of observation after lesions—lesions induced in the most delicate and complicated organ of the body by means so absurdly rough that, as Ludwig has forcibly put it, they may be compared to injuries to a watch by means of a pistol-shot. The results obtained in this way are attributable to the most diverse causes; for, apart from the fact that it is impossible to localise the lesion itself, the results may be due to irritation of centres, paralysis of centres, stimulation of conducting apparatus, or paralysis of conducting apparatus, without our being able to say which. Hence the interpretation of even those phenomena which are constant in their occurrence is always uncertain. The third and best method of investigation which is possible is the observation of cases of disease in which the exact nature of the lesions is accurately ascertained after death."—*Hermann's Human Physiology*, translated by Professor Gamgee, London, 1878. (Chapter on the Functions of the Encephalon), p. 444.

Fick, Adolf. B. at Cassel, 1829. M.D., 1852, Extraordinary Prof., 1856, and later, Prof. of Physiology in ordinary Univ. Zurich; Prof. Physiol. at Wurzburg, 1868.

Author of "Die medicinische Physik," Brunswick, 1857; "Compendium der Physiologie des Menschen mit Einschluss der Entwicklungsgeschichte," Vienna, 1860; "Anatomie und Physiologie der Sinne," Lahr, 1862; and numerous papers on physiology which have appeared under the title of "Arbeiten aus dem Physiologischen Laboratorium der Würzburger Hochschule," Wurzburg, 1874.

Made experiments on the influence of mechanical stimulation of the cerebro-spinal organs described in "Arch. of Anat. Physiol., 1867," p. 198.

Filehne, Wilhelm, M.D. Prof. Extraordinary Univ. of Erlangen.

Author of "Die Wirkungen des Amylnitrites," Mueller's Archives, 1879, Physiol. Abtheil; "Ueber Apsnoe und die Wirkung eines energischen Kohlensäurestroms auf die Schleimhäute des Respirationsapparats und ueber den Einfluss beider auf verschiedene Krampfornen," Reichert u. du Bois Reymond, Archiv für Anat. u. s. w. Jahrg. 1873, p. 361.

Made experiments in the Physiological Institute at Erlangen.

Fiori, Andrea, M.D. Assistant Prof. University, Modena.

Fleming, William James, 155, Bath Street, Glasgow. M.D. Glasgow, 1879; M.B. 1872; F.F.P.S. Glasg., 1875; L. 1872; (Univs. Glasg. and Edin.); Lect. on Physiol. Glasg. Roy. Infirm. School

of Med.; Ext. Disp. Surg. Roy. Infirm.; Exam. in Physiol. F.P.S. Glasg.

Contrib. "Behaviour of Carbolised Catgut inserted among Living Tissues," *Lancet*, 1876; "The Motions of the Brain" (with illust. graphic tracings), *Glasg. Med. Journ.*, 1877; "Physiology of the Turkish Bath," *Journ. Anat. and Physiol.*, Vol. XIII.; "Pulse Microtism," *Ibid*, Vol. XV.

Held a License for Vivisection at Glasgow Royal Infirmary Medical School in 1879-80-81-82-83. Certificates for Illustrations of Lectures in 1879-80-81-82-83. Certificates Dispensing with obligation to Kill in 1880, Certificate for Experiments without Anaesthetics in 1882. No Experiments returned in 1883.

Flint, Austin. B. Northampton, Mass., U.S., 1836; M.D., Jeff. Med. Coll., 1857; Prof. Phys. Univ.; Buffalo, 1858; Professor of Physiology and Microscopy, Bellevue Hosp; Medical College, New York, and Long Island College Hospital; Fell. New York Acad. of Med.; Resident Mem. of Lyceum of Nat. Hist., New York, &c.

Author of "Physiology of Man," 4 Vols., New York, 1866, etc.; Essay on "The Excretory Function of the Liver," which received the French Inst. prize of 1,500 fr.; contrib. to "American Journ. of Med. Science," etc.

"... For some years the author has been in the habit of employing vivisections in public teachings."—Preface to "*Physiology of Man*," Vol. I., p. 8.

"We have long been in the habit, in class demonstrations, of removing the optic lobe on one side from a pigeon. . . . The experiment of dividing the sympathetic in the neck, especially in rabbits, is so easily performed that the phenomena observed by Bernard and Brown-Séquard have been repeatedly verified. We have often done this in class demonstrations." "The cerebral lobes were removed from a young pigeon in the usual way, an operation . . . which we practice yearly as a class demonstration." "Our own experiments, which have been very numerous during the last fifteen years, are simply repetitions of those of Flourens, and the results have been the same without exception." We have frequently removed both kidneys from dogs and when the operation is carefully performed the animals live from three to five days."—*Dr. Flint's Report to the Medical Congress*, August, 1881.

"It is not desirable to administer an anæsthetic, and it is much more satisfactory to divide the nerve without etherising the animal, as the evidence of pain is an important guide in this delicate operation."—*Text-Book*, p. 641.

Speaking of an experiment by which an animal was caused to vomit from a pig's bladder which had been substituted for a stomach, Dr. Flint says in his "*Physiology of Man*," Vol II., p. 300:—"These experiments were made simply for class demonstrations, and have never before been published."

Flourens, Jean Pierre Marie. B. at Thezan (Hérault), 1794, D. at Mougéron, near Paris, 1867; M.D., Montpellier, 1813, pupil of De Caudolle and Cuvier; Prof. at the Jardin des Plantes; Mem. of Inst. of France; Perpetual Sec. Acad. des Sciences; Mem. Academy of France; Commander Leg. of Hon.; Mem. of principal Litt. and Scient. Socs. of Europe.

Author of "Analyse de la Philosophie Anatomique, où l'on con-

sidière plus particulièrement l'influence qu'aura cet ouvrage sur l'état actuel de la Physiologie," Paris, 1819; "Recherches sur les fonctions du grand sympathique," 1823; "Recherches expérimentales sur les propriétés et les fonctions du système nerveux dans les animaux vertébrés," Paris, 1824; "Experiences sur le système nerveux," Paris, 1825; "Experiences sur l'action de la moëlle épinière sur la circulation," Paris, 1829; "De l'instinct et de l'intelligence des animaux," Paris, 1841; "Recherches sur le développement des os et des dents," Paris, 1842; "Mécanisme de la respiration des poissons," Paris, 1843; "Anatomie Générale de la peau et des membranes Muqueuses," Paris, 1843; "Examen de la Phrénologie, réfutation des doctrines matérialistes de Gall, Spurzheim, et Brouissais," Paris, 1842; "Théorie expérimentale de la formation des os," Paris, 1847; "Nouvelles recherches touchant l'histoire de la circulation du sang," Journal des Savants, 1849; "De la longévité humaine et de la quantité de vie sur la terre," Paris, 1856; "De la vie et de l'intelligence," Paris, 1858; "De la raison du génie et de la folie," Paris, 1861; "Psychologie comparée," Paris, 1864, and a great number of contributions to the "Comptes rendus de l'acad. des Sciences."

Made numerous experiments on ruminating animals, on rabbits, on the brains of fishes, and on the semicircular canals of the brains of ducks, fowls, and pigeons.

"The description given by Flourens of the phenomena resulting from the section of the semi-circular canals in rabbits, is almost entirely inaccurate."—Cyon, "*Fonctions des canaux semi-circulaires*," Bibl. de l'Ecole des Hautes Etudes, Paris, 1879, p. 51, note 2.

"Flourens supported his bold hypothesis almost solely by experiments on pigeons and other inferior animals. The few experiments on mammals, which he mentions, are very meagrely described and of trifling value."—Goltz, "*Verrichtungen des Grosshirns*," p. 3.

"I heard M. Flourens, in one of his lectures, state the following:—'Majendie sacrificed 4,000 dogs to establish the distinctions of the sensory and the motor nerves according to Charles Bell; then he sacrificed 4,000 more dogs to prove that he had made a mistake. I,' added M. Flourens, 'had to continue the experiments, and I have proved that Majendie's first opinion was correct; the reflex motions, which he did not quite understand, had caused his doubts. To arrive at this result, I also have had to sacrifice a great number of dogs.'"—Blatin, *Nos Cruautés*, pp. 201-202.

Foderholm, A. M.D., Stockholm.

Made experiments on dogs and rabbits with carbon oxide.—*Scandinavian Med. Archives*, 1874.

Fortunatow, A. Physiol. Inst., St. Petersburg.

Author of "Ueber die Fettresorption und histologische Structur der Dünndarmzotten," Pflüger's Archiv., Vol. XIV., p. 285.

Experiments on the bile of frogs and lampreys.

Foster, Michael, Shelford, Cambridge. M.D. Lond, 1859; M.B., 1858; B.A., 1854; M.R.C.S. Eng. 1857 (Univ. Coll.); LL.D. (Hon.), Glasg.; M.A. (Hon.), Cantab.; F.R.S., F.C.S., F.L.S.; Fell. Univ. Coll., Lond.; Prof. of Physiol. Univ. Camb.; Fell. and late Prælect. of Physiol. Trin. Coll., Camb.; late Fuller Prof. Physiol. Roy. Inst., Great Britain; and Prof. of Pract. Physiol. Univ. Coll.,

Lond. Member of the Assoc. for Advancement of Medicine by Research.

Author of "Text Book of Physiology;" "Primer of Physiology;" joint author of "Elements of Embryology;" "Handbook of Physiological Laboratory." Editor "Journ. of Physiol." Contrib. Journ. Anat. and Physiol., Proc. Roy. Soc., etc., etc.

Held a License for Vivisection at Cambridge University Physiological Laboratory New Museum, also unrestricted as to place in 1878-79-80-81-82. Certificate for Illustrations of Lectures, also Two Certificates dispensing with obligation to kill in 1878. No experiments returned.

Fothergill, John Milner, 110, Park Street, Grosvenor Square, W. M.D. Edin., 1865; M.R.C.P. Lond., 1872; L.R.C.P. Edin., 1865; L.R.C.S. Edin., 1865; (Univ. Edin., Vienna, and Berlin); Mem. Gen. Com. Univ. Edin.; Assoc. Fell. Coll. Phys. Philadelphia; Phy. City of Lond. Hosp. for Dis. of Chest; late Asst. Phys. W. Lond. Hosp.; formerly Sen. Res. Med. Off. Leeds Dispensary.

Author of "Digitalis: its Mode of Action and its Use" (Hastings Prize Essay British Med. Assoc.), 1870; "The Heart and its Diseases, with their Treatment, including the Gouty Heart," 2nd edit., 1879; "The Practitioner's Handbook of Treatment; or the Principles of Therapeutics," 2nd edit., 1880; "The Antagonism of Therapeutic Agents, and what it Teaches" (Fothergill Prize Essay, Med. Soc.), London, 1878; "Animal Physiology," 1881, etc., and numerous contribs. to *Lancet*, *Brit. Med. Journal*, *Brain*, *Practitioner*, etc.

"Our object was to verify the assertions of several authors, but more especially those of Fothergill, who asserts that digitalis occasions a contraction of the small arteries; which he has noticed occurs in the web of a frog's foot. The experiments which I have made in connexion with this fact have given negative results. With a view to observe this action, I have often examined the webs of frogs' feet for hours under the microscope without succeeding in observing any change in the small arteries."—*Pflüger's Archiv.*, Vol. V., p. 168.

Foulis, D., Glasgow. Lect. Path. Roy. Inf. Med. School; M.D.

Held a License for Vivisection at Glasgow Royal Infirmary Medical School in 1881. Certificate dispensing with obligation to kill, 1881. No experiments returned.

Fox, Wilson, 67, Grosvenor Street, W. M.D. Lond., 1855; B.A., 1850; F.R.C.P. Lond., 1866; (Univ. Coll.); F.R.S.; Phys. Extraordinary to H. M. the Queen; Phys. in Ord. to their R. I. H. the Duke and Duchess of Edinburgh; Fell. of Univ. Coll.; Holme Prof. Clin. Med. Univ. Coll.; and Phys. Univ. Coll. Hosp.; Corr. Mem. Phys. Med. Gesellschaft, Warzburg.

Author of "Diseases of the Stomach;" "On the Artificial Production of Tubercle" (Lect. R.C.P.), and various contrib. to *Med. Chir. Trans.*, *Phil. Trans.*, etc.

Held a License for Vivisection at University College, London, New Physiological Theatre and Physiological Laboratory and Curator's Rooms, in 1882 and 1883; also same years a Certificate dispensing with obligation to kill. No Experiments returned.

"It is not without historical interest that Dr. Wilson Fox has formally confessed his belief in the fallacies of his former experiments, and basing this opinion upon the results of a careful series of similar investigations carried out, at his request, by Dr. Dawson Williams, in Dr. Burdon-Sanderson's laboratory, he has expressed his belief in the specific nature of the tubercular virus. Dr. Fox has found, on repetition of his former experiments, that any injury to rodents does not cause tubercle, but that it is only produced by the inoculation of tubercular material."—*Brit. Med. Journ.*, Dec. 29th, 1883, p. 1298.

"Wilson Fox operated on a considerable number of animals (117 guinea-pigs and 12 rabbits), and he experimented with every variety of matter whether tuberculous or not.—*Arch. de Méd.*, 1883, Vol. XI., p. 48.

Fraenkel, Albert. M.D.; Assistant at the Medical School and Private Lecturer at the University, Berlin.

Contrib. to "Berliner Klinische Wochenschrift," 1883, No. 37, and to *Allgem. Med. Central-Zeitung*, 1883, Nos. 11 and 62.

Verified the experiments published by Paul Bert in his "Pression barométrique."

Franck, François, 5, Rue Saint-Philippe-du-Roule, Paris. Prof. Nat. Hist. of Organic Bodies and Physiol., Coll. France.

Author of "Effet des excitations des nerfs sensibles sur le coeur et la circulation artérielle, dans Travaux du Lab. de M. Marcy," 1876; "Recherches, expérimentales sur les effets cardiaques, vasculaires et respiratoires des excitations douloureuses," "Comptes rendus" l'Acad. des Sci., 1876-1878. Contrib. Art. "De la Dissociation des filets irido dilatateurs et des nerfs vasculaires au dessus du ganglion cervical supérieur;" to *Gaz. Méd. de Paris*, 1878, p. 378, "experiments on dogs." Contrib. "Physiologie expérimentale: innervation du coeur," *Gaz. Hebdom.* No. 15, (1879), p. 230; No. 16, p. 246; No. 18, p. 277; No. 19, p. 295; No. 21, p. 326; "Système Nerveux physiologie générale," *Dict. encyclop. des Sciences Médicales*, Paris, 1879; also various articles to *Gazette Médicale de Paris*; *Comptes rendus de la Soc. de Biol.*, and *Journal de l'Anat. et de Physiologie*.

Inventor of an apparatus for submitting animals to rapid or slow variations of temperature.—*Gaz. Méd. de Paris*, June 7th, 1879.

Fraser, J. L., Edinburgh. M.D.; Lab. Vet. College, Clyde, Street; Physiol. Class Room.

Fraser, Thomas Richard, 37, Melville Street, and University, Edinburgh. M.D. Edin. (Thesis Gold Medallist), 1862; F.R.C.P. Edin., 1869; M. 1868; (Edin.) F.R.S. Lond. & Edin.; Corr. Mem. Therap. Soc. Paris, etc. Prof. of Mat. Med. and Clin. Med. Univ. Edin.

Contrib. "On the Physiological Action of the Calabar Bean;" *Trans. Roy. Soc. Edin.* Vol. XXIV.; "An Investigation into some previously undescribed Tetanic Systems produced by Atropia in cold blooded Animals," etc., and various other papers to *Journ. Anat.* and *Physiol.*, Practitioner, etc.

Held a License for Vivisection at University of Edinburgh, Materia Medica Department, in 1878-79-81-82. Certificates for Experiments without Anaesthetics, in 1878-79-81-82. Two Certi-

ficates for the same purpose in 1878. No experiments returned in 1878-81-82.

[In Return for 1881 entered as J. L. Fraser.]

Fredericq, Léon. M.D., Prof. in Ord. Univ. of Liège, Belgium.

Author of "Expériences sur l'innervation respiratoire;" Supp. Du Bois Reymond's Arch., 1893, p. 51; Contrib. to Du Bois Reymond's Archives, 1883.

Experiments on the innervation of respiratory centres; also on the effects of ice on the exposed spinal cord of rabbits. Has used dogs, rabbits, and ducks for his experiments.

Frerichs, Friedrich Theodor. Born 1819, at Aurich. In 1838 studied at Göttingen; 1842, practised medicine at Aurich, where he acquired some renown as an oculist. Studied also at the Institutions of Prague, Vienna, Holland, Belgium, and France. Private Prof. of Med. in Göttingen. Director of the Academical Hospital, Kiel. Conducted two ambulance hospitals during the Schleswig-Holstein War. Prof. of Pathology and Therapeutics, Breslau, 1851. Professor of clinical medicine and director of La Charité, Berlin, 1859; councillor and member of the Scientific Deputation for medical affairs.

Author of "Ueber Gallert oder Colloidgeschwülste," Göttingen, 1847; "Ueber die Brightsche Nierenkrankheit," Brunswick, 1857; "Klinik der Leberkrankheiten," Brunswick, 1859-62 (translated into French, English, and Italian). Contrib. numerous articles to Liebig's, Poggendorf's, and Wöhler's Dictionaries of Chemistry, etc.

Fritsch, Gustav Theodor. M.D. B. at Kottbus, 1838. Studied in Berlin, Breslau, and Heidelberg. Anat. Inst. Berlin, 1867. Extraordinary Prof. same Univ., 1874.

Author of "Drei Jahre in Süd Afrika," Breslau, 1868; "Ueber das stereoskopische Sehen im Mikroskop," Berlin, 1873; "Untersuchungen ueber den feineren Bau des Fischgehirns mit besonderer Berücksichtigung der Homologien bei anderen Wirbelthierklassen," Berlin, 1878. Joint author with E. Hitzig of "Ueber elektrische Erregbarkeit des Grosshirns," in Arch. f. Anat. u. Physiol. Wissensch. III., 1870, p. 300-332.

"By means of perfected electric apparatus G. Fritsch and E. Hitzig were enabled to satisfy themselves that the surface of the brain in the rabbit reacted under the influence of the electric current. They then made a series of experiments on dogs, and published results which did not perhaps attract sufficient attention, and which were in opposition to the opinions till then accepted."—Art. "Cerveau," *Encyclopédie des Sciences Médicales*, Vol. XIV., 1873, p. 210.

Fubini, Simon. B. 1841. M.D. Turin; Prof. of Physiol. Univ. of Turin; Prof. Univ. Palermo.

Author of "Sulla Condrina, Osservazioni di Moleschott e Fubini, Annotazione sopra la saliva parotidea e sopra il sudore;" "Gemelli xiphoide juncti," *Giornale della R. Accademia di medicina*, No. 1 e 2, 1878, &c. Editor of Turin Medical Gazette.

Funke, Otto. B. at Chemnitz, 1828. Studied Univ. Leipsig, 1846; Prof. Physiol. Leipsig, 1854; Prof. Univ. Freiburg in Breslau, 1860; Mem. Academy of Saxony.

Author of "Atlas der physiologischen Chemie," Leipsig, 1858; last part of "Günther's Lehrbuch der Physiologie für Akademische Vorlesungen," Leipsig, 1870; "Lehrbuch der Physiologie," Leipsig, 1880.

Gamgee, Arthur, Owen's Coll., Manchester, and Oaklands, Bowdon, Cheshire. M.D. Edin. (Thesis Gold Medallist), 1862; F.R.C.P. Edin., 1872; M. 1871 (Edin.); F.R.S. London; Brackenbury Professor of Physiol. and Histol. and Dean of Med. Department Owen's College, Manchester; Exam. in Physiol. Univ. London; late Lecturer on Physiol. Surg. Hall; Physician Roy. Hosp. for Sick Children, and Sen. Pres. Roy. Med. Soc. Edin.; Mem. Assoc. for Advancement of Medicine by Research.

Author of "A Text Book of the Physiological Chemistry of the Animal Body," 1880; Translator and Editor "Hermann's Elementary Human Physiology;" Joint Editor Journ. of Physiol., Cambridge; also of numerous Papers in various Journs. and Trans. of Learned Soccs.

Held a License for Vivisection at Owen's College, Manchester, in 1878-81-82-83. Certificates for Illustrations of Lectures in 1881-82-83. Certificates for Experiments without Anæsthetics and for Experiments on Cats, Dogs, Horses, Mules or Asses in 1878. No Experiments returned in 1881. No Experiments on Horses, Mules or Asses.

"(Q. 5412.) (Viscount Cardwell.) You are of opinion that in inflicting operations, in themselves very painful, upon living animals, curare ought not to be trusted as taking away sensibility to pain? I should think not. I would add this: I do not believe that physiologists use it for that purpose. It is used in order to eliminate a series of fallacies which obtrude themselves in physiological experiments."—*Ev. Roy. Com.*, London, 1876.

"Nor was I guilty of the want of taste and judgment with which she (Miss Cobbe) taunts me and English physiologists in general, of exonerating themselves at the expense of their continental confrères. 'Unquestionably' I said 'there have been brutal things done by physiologists, never as far as I am aware by English and very rarely by continental physiologists.'"—*Manchester Guardian*, Feb. 13, 1883.

Gaskell, W. H., Cambridge. M.A., M.D.

Author of "On the Vasomotor Nerves of Striated Muscles," Studies of the Physiol. Lab. Univ. Cambridge, p. 132.

Held a License for Vivisection at University Cambridge Physiological Laboratory New Museum in 1879-80-81-82-83. No Experiments returned in 1880-81 and 1882.

"15th February, 1878.—Terrier bitch, quite young, weighs 7½ kilogrammes (about 16½ lbs.). Extensor vein prepared on both sides; ligature placed under left crural nerve. Morphia and curare given. Artificial respiration." &c.

"31st January, 1878.—Dog, weight 8 kilogrammes (about 17½ lbs.). Morphia and curare. Artificial respiration. Right extensor vein and right crural nerve prepared." &c.

"20th February, 1878.—Terrier bitch, weight 6½ kilo (about 13½ lbs.). Morphia given. Left extensor vein prepared, and left

crural nerve cut and ligatured at 4.2 p.m. Between 3.40 and 4.7 p.m., 0.015 grms. curare were injected into jugular vein; artificial respiration." &c.

"February 18, 1878.—Large sheep dog, weight 20.5 kilo. (about 45½ lbs.). Morphia given, 0.075 grms. curare, injected into jugular vein. Abdomen opened in middle line, and left abdominal sympathetic trunk cut and ligatured about the fourth lumbar ganglion." &c.

"March 4, 1878.—Spaniel bitch, weight 13½ kilo. (about 30½ lbs.). After the termination of the curve given in Fig. 3, 0.06 grms. curare were injected into the jugular vein; artificial respiration was performed, and the left crural nerve was laid free." &c.—"Further Researches on the Vasomotor Nerves of Ordinary Muscles," by W. H. Gaskell, M.A., Trin. Coll. Camb., "*Journ. Physiol.*," Vol. I., pp. 265-6, 276, 228, 295.

Gautier, E. J. Armand, 72, Rue d'Assas, Paris. B. at Narbonne. M.D., 1862; Agrégé de Clinic., Med. Fac.; Member Acad. de Méd.

Author of "Etudes sur les fermentations proprement dites et les fermentations physiologiques et pathologiques," Paris, 1869; "Chimie appliquée à la physiologie, à la pathologie et à l'hygiène et les méthodes de recherches les plus nouvelles," Paris, 1874.

"Made experiments with the venom of snakes (*Naja tripudians*)."—*Archiv. de méd.*, Vol. 2, 1881, p. 360.

Gavarret, Louis-Denis Jules, 73, Rue de Grenelle, Paris. B. 1809. M.D., 1843; Prof. Med. Physics at Med. Faculty; Mem. Acad. of Medicine, 1858; Inspector-General of Public Instruction for Medicine, 1879.

Author jointly with M. Andral of "Investigations sur la nature du sang et l'organisation physique de l'homme," 1840-43; "Sur la chaleur produite par les corps vivants," 1853. "Des Images par reflexion et par refraction," Paris, 1856. "Physique biologique, les phénomènes physiques de la Vie," Paris, 1869, etc., etc.

Gergens, E. M.D.; Asst. at Physiol. Inst., Strasburg.

Author of "Ueber gekreuzte Reflexe," Pflüger's Archiv., Vol. XIV., p. 340; "Einige Versuche ueber Reflexbewegung mit dem Influenz-Apparat," Pflüger, Vol. XIV., p. 65. Joint author (with E. Baumann) of "Ueber das Verhalten des Guanidin, Dicyanidin, und Cyandin im Organismus," Pflüger, Vol. XII., p. 205. Assisted Prof. Goltz in his work, "Ueber Verrichtungen des Grosshirns."

Made experiments jointly with E. Baumann on dogs and rabbits, also on the brains of the former.

" . . . I dissected out the above-mentioned nerves in some of the animals I had used before, and tried direct stimulation. Naturally even a weak current must have a powerful effect, when in immediate contact with the nerve, and the result was as I had anticipated. The animals croaked once and made the wildest efforts to escape. . . ."—"Einige Versuche ueber Reflexbewegung," pp. 67-68.

Gerlach, Leo. M.D., Erlangen.

Author of "Ueber die Beziehungen der N. Vagi zu den glatten Muskelfasern der Lunge," Pflüger's Archiv., Vol. XIII., p. 491.

Made experiments on curarised dogs and rabbits in the Laboratory of Prof. Kuhne, in Heidelberg, also in the Physiological Institute at Erlangen.

Gibbes, Heneage, 94, Gower Street, W.C. M.D., Aberd., 1881, M.B. and C.M., 1879; L.R.C.P., Lond. 1879; (Univ. Aberd. and St. Barthol.); Mem. Gen. Counc. Univ. Aberd.; Fell. Roy. Micros., Med., and Zool. Soc.; Mem. Path. Soc., Phys. Met. Disp.; Lect. on Physiol. and Histol. West. Hosp.; late Curator Anat. Mus., King's Coll.

Author of "Practical Histology and Pathology," 2nd edit. Contrib. various papers to Quart. Journ. Micros. Sci., Lancet, etc.

Held a License for Vivisection at the Laboratory and Out-house in the garden, 94, Gower Street, W.C., 1883. Certificate dispensing with obligation to kill same year. Dr. Gibbes could also perform experiments at the Physiological Laboratory and Anatomical Theatre, King's College, London.

Gibson, George Alexander, 1 Randolph Cliff, Edinburgh. M.D. Edin., 1881; M.B. Edin., and C.M. 1876; F.R.C.P. Edin., 1880; M. 1879 (Edin. Dub. and Berlin); Mem. Gen. Counc. Univ. Edin.; F.R.S.E.; F.G.S. Lond.; Hon. Mem. (late Pres.) Dialect. Soc. Edin.; Mem. Brit. Association for Adv. of Sci.; and British Med. Assoc.; Lect. on Med. Anat. and Phys. Diagnosis, Edin. Sch. Med.; formerly Demonstrator of Anat. Univ. Edin.

Contrib. to *Lancet*, Rep. Brit. Assoc. for Adv. of Sci., Nature, Journ. Anat. and Physiol., etc., etc.

Held a License for Vivisection at Veterinary College, Clyde Street, Edinburgh Laboratory and Physiological Class Room in 1879, and at University Edinburgh Materia Medica Department, in 1880. Certificates for Testing previous Discoveries in 1879 and 1880. No experiments returned in 1879.

Gierke (Dr.) Asst. Prof. Physiol. Inst., Breslau University.

Glaevecke, Ludwig Christian H. J. M.D. First Asst. Clin. Hosp. at Kiel, 1881.

Author of "Ueber die Ausscheidung und Vertheilung des Eisens im thierischen Organismus," Kiel, 1883.

Made experiments on animals to ascertain the effects of subcutaneous injections of iron.

Gluck, Theodor. M.D. Asst. Inst. Clinic. Surg. Univ. of Berlin.

Extirpated sections of lungs in rabbits and dogs, and hopes to persuade the medical profession to sanction extirpation and re-section of the lungs as a method of operative surgery.—*Archiv. fuer Klinische Chirurgie von Langenbeck, Billroth, Gurlt*, Vol. 26, p. 916, Berlin, 1881. (See Block.)

Golding-Bird, Cuthbert Hilton, 13, St. Thomas Street, London, S.E. B.A. Lon. (Honours), 1867; M.B. (Honours, Gold Medal in For. Med.), 1873; F.R.C.S. Eng. (Exam.), 1874; L.R.C.P. Lond., 1872 (Guy's and Paris); Prizem. 1869-71-72; Gold Medallist in Chir. Med., and in Chir. Surg., 1873; Mem. Path. and Chir. Soc.; Assistant Surg. and Demonst. of Pract. Physiol., Guy's Hosp. Contribs. to *Lancet*, *Brit. Med. Journ.*, *Guy's Hosp. Reps.*, &c.

Held a License for Vivisection at Guy's Hospital School

Buildings in 1881; also Certificate for Illustrations of Lectures, 1881. No Experiments returned.

Golgi, M. C. Prof., Pavia.

Experiments on cerebral localization.—*Archiv. Ital.*

Author of "Di una reazione apparentemente nera delle cellule nervose ottenuta col bicloruro di mercurio."—*Arch. p. l. scienze mediche*, Vol. III., 1879, N. 11.

Goltz, Friedrich. Direct. of Inst. for Exper. Physiol., Strasburg; formerly prosecutor Univ. Königsberg, Prussia.

Author of "Beiträge zur Lehre von den Functionen der Nerven-centren des Frosches," Berlin, 1869; "Verrichtungen des Grosshirns," 1881; "Wider die Humanaster," 1883; "Ueber die physiologische Bedeutung der Bogengänge des Ohrlabyrinths," Pfüger's *Archiv.*, Vol. III., p. 172.

"I owe the fundamental idea of my method of experimentation to the memory of my experience as prosecutor at Königsberg. I have often dissected out the arteries of the brain filled with torpid matter. . . . I resolved to try whether it would be possible to rinse out the living brain and spare the larger veins. The very first effort was so successful that it encouraged me to proceed, and that was the origin of this work. . . . All my experiments were made on dogs which I chloroformed before the operation. To bare the skull, I generally made first a cut in the centre and separated the skin on one side, so that the muscles of the temples were visible. Then according to the experiment I wished to make, a portion of the muscle was cut away to expose the place in the bone where the hole was to be bored. According to the requirements of the case, one, two, or still more holes were bored, and after making a cut in the head skin, the brain matter was rinsed out. I generally used spring water, heated to the temperature of the blood. . . . At all events till now, as far as my knowledge of the literature of this subject goes, no one has succeeded in making such extensive destruction of the brain and still preserving life. I have succeeded in a series of experiments made at different intervals, in so seriously injuring one hemisphere, that all the circumvolutions that touched the skull had disappeared. The animal lived for weeks with its crippled brain, and served for many observations."—*Verrichtungen des Grosshirns*, pp. 3-8. (A work dedicated to his "English Friends.")

"It is not often that two physiologists agree in matters relating to the physiology of the brain."—*Ibid.*, p. 9.

"I do not by any means claim that my researches can be of any value in themselves for the pathology of the human brain. Let the pathologists continue steadily to collect facts, then the apparent contradictions between the experiments on animals and the observations at the bedside will soon be reconciled."—*Ibid.*, p. 176.

"The fact that both in tortoises and in toads, the extirpation of the cerebellum and the superior two-thirds of the bulbous *does not abolish* the sense of equilibrium, proves that the too widely generalised theory of Goltz which localises this sense in the cerebellum, as also that of Vulpian, who in the inferior vertebrates, places the seat of this sense in the part corresponding to the annular protuberance of the superior vertebrates, are both equally inexact.—Florence, June, 1883."—FANO, "*Recherches expérimentales sur un nouveau centre automatique dans le tractus bulbo-spinal.*"—*Arch. ital. de Biol.*, Vol. III., p. 368.

"It is self evident, that Goltz's experience, when quoted against the localizations of functions in the cortex of the brain is of no worth." . . . (p. 11). "Professor Goltz's assumption that irritation sets up inhibitory processes, having their seat in the cerebrum, which cause, through paralysis of certain centres situated in the cerebellum and its connections, all the non-permanent disturbances,—this assumption is inadmissible" (p. 13).—Munk, *Ueber die Functionen der Grosshirn-Rinde*.

"After I had laid bare the bone behind the ear of the pigeon, I bored out, bit by bit, with the help of a sharp hollow chisel, the ear labyrinths on both sides of the head. The bleeding caused by this operation is very considerable. In those cases where I endeavoured to destroy entirely both labyrinths, the birds died soon after the operation with violent rolling movements or somersaults. For this reason I afterwards contented myself with breaking out pieces of the superficial canals. Many of the thus injured birds I have kept alive a long time, and especially two which I had operated upon half a year ago, and which I exhibited at the Congress of Naturalists at Innsbruck on 21st September, 1869."—Pflüger's *Archiv.*, Vol. III., pp. 177-78.

"The sanguinary part of the operation begins with the insertion of the cannula to supply artificial respiration. Then the right carotid artery is dissected out. Afterwards, while artificial respiration is being set up, a square opening is made in the left wall of the chest with a knife and the bone scissors. The opening is extended far into the right pleural cavity, and widened downwards till it reaches the diaphragm which is severed from the ribs. It is best to make the opening in the chest large enough to avoid any pressure on the heart from the lungs or other neighbouring parts. The pericardium is opened wide so that the greatest possible surface of the heart may be exposed to the action of the atmospheric air. After this sanguinary preparation the catheter is introduced from the right carotis into the aorta, and from thence to the left ventricle of the heart. As soon as it has reached this point (which fact can be ascertained by feeling the exposed heart) the stopper (of the instrument previously described) is withdrawn. The next systole sends a powerful stream of blood into the catheter, which is immediately checked by fixing the gutta percha end of the previously set manometer on this conducting catheter. Now begins the observation which richly repays the tedious and bloody preparation. The heart pumps out the manometer with surprising rapidity. . . . We have repeated this experiment six times."—*Ueber die Druckverhältnisse im Innern des Herzens*," Pflüger's *Archiv.*, Vol. XVII., p. 113.

Gombault (Dr.), 3, Rue Rouget-de-l'Isle, Paris. Prof. Path. Anat. Practical Courses.

Greenfield, William Smith, 7, Heriot Row, Edinburgh. M.D. Lond., 1874; F.R.C.P. Lond., 1879; F.R.O.P. Edin., 1881; M.R.C.S. Eng., 1872; (Univ. Coll.); Fell. Univ. Coll. Lond. and Roy. Med. Chir. Soc.; Mem. Path. and Clin. Soc.; Fell. Roy. Micros. Soc.; Prof. of Gen. Path. and Clin. Med. Univ. Edin.; late Asst. Phys. and Lect. on Path. Anat. St. Thomas's Hosp.; Prof. Superint. Brown Inst.; Phys. Roy. Infirm. for Childr. and Wom., Waterloo Road; Phys. Roy. Hosp. for Dis. of Chest, and Med. Regist. St. Thomas's Hosp.

Trans. "Magnan on Alcoholism;" "Lancereaux's Atlas of Pathological Anatomy;" Author of Sect. on "Renal Pathology," new Syd. Sec. Atlas of Path.; (jointly) "Report on Pyæmia and Allied Diseases" (for Path. Soc. and Loc. Govt. Board), 1879. Contrib. "Lectures on the Pathology of Anthrax and Allied Diseases," *Lancet* and *Brit. Med. Journ.*, 1880 and 1881; various papers in *Trans. Path. and Clin. Soc.* and elsewhere.

Held a License for Vivisection at Brown Institution, Laboratory Stables and Post Mortem Room, in 1879-80-81. Certificates for Experiments without anæsthetics in 1879-80-81. No experiments returned in 1881.

Gréchant, Louis François Nestor, 17, Rue de Berthollet, Paris. B. at Laon, Aisne, France, 1833. M.D. Asst. curator at the Museum of Nat. Hist., Paris; formerly Mem. Biol. Soc., Paris; *préparateur* of the Course of Physiol. at Fac. of Sci.

Author of "Tableau d'analyse chimique conduisant à la détermination de la base et de l'acide d'un sel inorganique isolé, avec les couleurs caractéristiques des précipités," Paris, 1862; "Recherches physiques sur la respiration de l'homme," Paris, 1864; "Manuel de physique médicale," Paris, 1869; "Sur l'endomose des gaz à travers les poumons détachés," *Gaz. Med. de Paris*, 1878; "Sur l'activité physiologique des reins," *Ibid*, 1879; "Recherches quantitatives sur l'élimination de l'oxyde de carbone," *Ibid*; "Recherches comparatives sur l'exhalation de l'acide carbonique par les poumons," *Journ. de l'Anat et Physiol.*, 1880; "Influence de la section des pneumogastriques sur l'exhalation d'acide carbonique par les poumons" *Arch. pour les Sci. Med.* 1882.

"Dr. Gréchant recently made an interesting communication to the Biological Society, on the quantity of alcohol that would be necessary to produce fatal effect. With this view he performed a series of experiments, the results of which were always identical. By means of an œsophageal tube, Dr. Gréchant injected into the stomach of a dog thirty grammes of alcohol every half hour until the animal died. At the post-mortem examination, he found that the blood of the animal contained a proportion of one part of absolute alcohol to 100 parts of blood."—*Lancet*, Jan. 20th, 1883, p. 125.

"I prepared in a large gutta percha balloon a mixture of 100 litres of air and 255 cubic centimetres of pure oxide of carbon, which made 1/392 of poisonous gas; I then opened the jugular vein in a dog of 9 kilos., and with a long india-rubber catheter introduced into the vena cava inferior, drew out 30 centimetres of blood, put it into a flask and defibrinised it by agitating it a few minutes. The animal's head was then placed in a gutta percha muzzle communicating with the top of the balloon containing the oxide of carbon, and the animal was allowed to breathe into it for half-an-hour. During the last two minutes a second quantity of blood was taken from the vena cava and defibrinised; then the animal was allowed to breathe in the air, and half-an-hour later a third sample of blood was taken. . . ."—*On the absorption of Oxide of Carbon* (Note presented to the Acad. of Sc. by M. Gréchant, April 8, 1878,) *Archives de Med.*, 1878, Vol. I., p. 750.

Griffini, L. Prof. Path. Anat. Lab. Univ. of Messina.

Author of "Sur l'action toxique de la salive humaine," *Arch. ital. de Biol.*, Paris, 1882.

"After the experiments of Vulpian showing that the saliva of a healthy man has a poisonous effect on rabbits, it was necessary to seek for an explanation of this unforeseen result. Therefore, the author of this essay determined to make a series of experiments to explain the malady which is produced in rabbits by the subcutaneous injection of human saliva."—*Arch. ital. de Biol.*, Vol. II., Part I., p. 106.

Groves, J. W., King's College, London.

Held a License for Vivisection at King's College Physiological Laboratory in 1881 and 1882. No experiments returned.

Gruber, A. Prof. Zool. and Zoot., Freiburg, in Baden University.

Grützner, P. Prof. Animal Physiol., Berne University.

Author of "Ueber Verschiedene Arten der Nervenerregung." *Pfüger's Archiv*, Vol. XVII., p. 215; "Beiträge zur Physiologie der Harnsecretion," *Ibid*, Vol. II.

Made experiments on dogs and rabbits in the Physiological Institute at Breslau.

"Exp. II. Dog not curarised: spinal marrow cut through at the beginning of the operation; also the vagi severed, nitrate of soda injected.

"Exp. III. Dog strongly curarised, and the medulla stimulated repeatedly by galvanic currents. Injections of nitrate of soda.

"Exp. VII. Dog curarised; nerves of the left kidney torn through, medulla subjected to electric stimulation. The vagi cut through.

"Exp. XI. Dog curarised; nerves of the left kidney torn through, digitalis and strychnine injected. Result cramps."—*Pfüger's Archiv*. Vol. II., p. 370.

Gscheidlen, Richard. M.D.; Prof. Physiol.; Direct. Physiol. Lab., Wurzburg.

Author of "Ueber einige Physiologische Wirkungen der Calabarbohne," in "Untersuchungen aus dem Physiologischen Laboratorium in Wurzburg," Leipzig, 1869; "Physiologische Methodik," 4th edit., Brunswick, 1879.

Forty-one experiments on rabbits and cats.

"..... Large doses cause violent cramps and convulsions. The animal struggles for breath, and writhes on the board to which it is fastened, and all the symptoms of the most violent dyspnoë set in. If the skin of the animal is slightly raised, it can be observed that the venous blood-vessels are puffed and swollen and contain dark blood. It soon becomes impossible to see how the animal breathes, and death follows."—*Untersuchungen aus dem Physiologischen Lab. in Wurzburg*, 1869, p. 275.

Guareschi, I. Univ. Turin.

Extract of putrified human brains injected into frogs, results resembling those of curare. Communicated to R. Academy Sciences, Turin, May, 1882.

Gubler, Adolphe Goblet. B. at Metz, 1822, d. 1879. Studied Med. Paris; Silver Medallist, 1847; M.D. Paris, 1849; Chef de Clinique of Prof. Bouillaud, 1850; Mem. Acad. Med., 1865; succeeded Prof. G. See, Prof. Therapeutics, 1868.

Founded "Journal de Thérapeutique," 1874; Author of "Commentaires Thérapeutiques du Codex," 1867.

Guébbart (Mons.), Paris. Prof. Physics Medical Faculty.

Günther, Albert, Surbiton, Surrey. M.A. and Ph.D. Tübingen, 1853; M.D. 1862; Diploma in Med. and Surg. Stuttgart, 1857; F.R.S.; F.Z.S.; Mem. Royal Soc. Sc. Upsala; Corr. Mem. Bristol Nat. Soc. and Liverpool Lit. and Phil. Soc.; Assist. Keeper Zool. Dept. British Museum.

Author of "Medical Zoology," Stuttgart, 1858; Catalogue "Fish," British Museum, 1859-70, &c.; late Editor "The Record of Zoological Literature."

Made experiments jointly with L. Brück on the influence of lesions of certain portions of the brain on animal heat.—Pfüger's *Archiv.*, 1870, p. 578.

"... I requested the students, Messrs. Brück and Günther, to repeat the experiments of Tscheschichin and Sewitzky. . . . The animals were, as in previous experiments, rabbits. The lesions were invariably made through the unopened skull. . . . Out of 23 experiments, 11 gave positive, and 12 negative results. These experiments have given us the following facts for further study:—The division of the brain between the pons varolus and the medulla oblongata may produce heightened temperature. Seven experiments of this section were made; in two only the results were as above; but in these two cases the evidence was in a high degree satisfactory. In four cases the temperature sank after the operation; in one the action was so positive that the temperature of the animal which had been bound for seven hours did not sink any lower after the operation, which it is well known generally happens."—Heidenhain, Pfüger's *Archiv.*, Vol. III., pp. 579-80.

Held a License for Vivisection (no place named) in 1882. Also Certificate for Experiments without anæsthetics same year.

Hall, Marshall. B. at Basford, Notts., 1790; d. 1857. M.D., Edin., 1812; M. 1827; F.R.C.P., 1841; Lect. on the Theory and Practice of Medicine at St. Thomas' Hosp.; Consulting Phys. to Moorcroft Lunatic Asylum, Uxbridge; Gulstonian Lecturer Roy. Coll. Physicians, 1842; F.R.S.L., and E.

Author of "The Principles of Diagnosis," London and Nottingham, 1817; "Medical Essays," London and Nottingham, 1825; "Diseases of Females," 1826; "Effects of Loss of Blood," 1828; "Researches principally relative to the morbid and curative effects of loss of blood," London, 1830; "An essay on the circulation of the Blood, especially as observed in the minute and capillary vessels of the Batrachia and of Fishes," London, 1831; "Lectures on the nervous system and its diseases," London, 1836; "Memoirs on the nervous system," London, 1837; "Practical observations and suggestions in medicine," London, 1846; "Essay on the theory of convulsive diseases," London, 1848.

Hällsten, K. Prof. Physiol. in Helsingfors, Finland.

Author of "Handledning för nybegynnare vid histologiska öfningar" (Manual of practical histology for beginners), Helsingfors, 1878. Contrib. to Scandinavian Med. Archives.

Made experimental researches on the irritability of various parts of the same nerve.

Harley, George, 25, Harley Street. M.D. Edin., 1850; F.R.C.P. Lond., 1864; F.R.C.P. Edin., 1858; M.R.C.S. Eng., 1850; F.R.S.; F.C.S.; Corr. Mem. Roy. Acad. Med. Madrid; Roy.

Acad. Sci. Bavaria; Phys. and Med. Soc. Wurzburg; Med. Soc. Halle, and Micros. Soc. Giessen; Mem. Path. Soc. Lond.; Fell. Roy. Med. Chir. Soc. Lond.; Mem. Roy. Med. Soc. Edin., etc., etc., formerly Prof. Med. Jurisprudence and Lect. on Histology and Pract. Physiol. Univ. Coll.; Pres. Paris Med. Soc.

Editor of "A Year Book of Medicine, Surgery and their allied Sciences," London, 1860, etc.; author of "On Digestion," 1859; "Action of Chem. and Phys. Agents on the Blood," Phil. Trans. 1865; "Jaundice, its pathology and treatment," London, 1863; "Albuminaria, with and without Dropsy, its different forms and treatment," London, 1866; "Diabetes, its different forms and different treatments," London, 1866, etc.

Made experiments on the physiological action of animal poisons, on dogs, cats, and frogs.

"The experiments were performed at University College, in the presence of my colleagues, Professors Sharpey, Ellis, and Williamson. . . . A large dog was bitten by one of the snakes over the right eye. . . . In three minutes the dog became very restless, and gave a low whine as if of pain. After moving about the room for ten minutes searching for a comfortable place to lie down on, he placed himself in the coolest part of the chamber, and laid his head on the cold stones, as if to relieve headache. He moaned as if in distress. . . . As the effects of the poison passed away, the pulse gradually recovered. . . . The serpent was once more allowed to bite him. The same train of symptoms again appeared, but in a more intense degree, and within twenty-five minutes he had become insensible. . . . Half an hour after being bitten the second time, convulsive twitchings began to appear in the fore limbs and muscles of the neck. In ten minutes more the whole body became convulsed. The limbs were stretched out and the head jerked backwards. . . . In two hours and a quarter the animal appeared to be dead, but on making an incision into the thorax, he gave a gasp. After waiting some time without observing any further sign of life, another incision was made, when he again gasped, but only once."—"On the influence of physical and chemical agents upon the blood," Trans. Roy. Soc., Vol. 155, p. 700.

Harris, Vincent Dormer, 39, Wimpole Street, Cavendish Square, London, W. M.D. Lond., 1876; M.B. (Honours), 1874; M.R.C.P. Lond., 1877; M.R.C.S. Eng., 1874 (St. Barthol. and Vienna); Fell. Roy. Med. Chir. Soc.; Mem. Path. Soc.; Sen. Phys. Met. Disp.; Demonst. of Physiol. St. Barthol. Hosp.; Asst. Phys. Victoria Pk. Hosp.; late Assist. Phys. W. London Hosp.; Casualty Phys., House Phys., Ophth. House Surg. and Regist. St. Barthol. Hosp.

Joint Author of "The Manual for the Physiological Laboratory;" Author of "Remarks on Angina Pectoris," "Tufnell's Treatment of Aortic Aneurysm," "The Diagnostic value of Cardiac Murmurs," and other papers in St. Barthol. Hosp. Repts.; "Condition of the Spinal Cord in Tetanus;" Path. Soc. Trans.; Contrib. to Lancet, Med. Times Gaz., Path. Soc. Trans., Quart. Micros. Journ., Journ. Anat. and Physiol., &c.

Held a License for Vivisection at St. Bartholomew's Hospital Medical School in 1880-81-82-83. Certificates for Illustrations of Lectures, 1880-81-82-83. No Experiments returned in 1880 and 1882.

Harting (Prof.), Utrecht University.

Harvey, Reuben J. D. 1882. B.A. Dublin, 1866; M.D., 1873; M.B. and M. Ch., 1870; F.K.Q.C.P. Irel., 1879; L. 1876 (T.C. Dublin, Vienna and Wurzburg); M.R.T.A.; Mem. Path. Soc. Dub.; Lect. Physiol. Carm. Sch. of Med.; Asst. Phys. and Pathol. House of Indust. Hosps.; Phys. Cork Street Fever Hosp.; late Exam. Anat. Univ. Dub.; Phys. for Dis. of Throat; Nat. Eye and Ear Infirm.; Ex-Schol. and Sen. Moderator T.C. Dub.; Ex. Med. and Schol. and Demonstrator of Anatomy Univ. Dub. Contrib. "Histology of Tendon," Irish Hosp. Gaz. 1873; "Ueber die Zwischensubstanz der Hoden," Centralblatt, 1875.

Held a License for Vivisection at Carmichael School of Medicine, Dublin Physiological Laboratory, and 212, Great Brunswick Street, Dublin, in 1878-79-80-81. Certificates for Illustrations of Lectures in 1878-79-81; also, Certificate Dispensing with obligation to kill in 1881, and Certificate for Experiments without Anæsthetics in 1880.

Haughton, Edward, Spring Grove House, Upper Norwood. M.D. Edin., 1856; M.R.C.S. Eng., 1855; B.A.T.C.D., 1858; L.M. Combe Lying-in Hosp. Gold Medal in Exper. and Nat. Sci.; Lect. on Med. Jurisprudence Steeven's Hosp. Med. Sch. Dub., 1859.

Author of "The Laws of Vital Force," 1869; "Practical Biopathy," 1881, etc.

Hay, Matthew, 230, Union Street, Aberdeen. M.D. Edin. (Gold Medal), 1881; M.B. and C.M. (First Class Honours), 1878 (Univs. Glasg., Edin., and Strasbourg); Ettles Prizem. 1878; Goodsir Prizem. 1881; Sanitary Research, Sch., 1883; Fell. Roy. Phys. Soc. Edin.; Vice-Pres. Chem. Soc. Edin.; Mem. Nat. Sci. Club; Prof. Med. Logic and Med. Jurisp. Univ. Aberd.; formerly Asst. to Prof. of Mat. Med. and Demonstrator of Pract. Mat. Med. Univ. Edin.; Phys. New Town Disp. Edin.

Contrib. "Action of Saline Cathartics," from Anal. and Physiol. Vol. XVI.

Held a License for Vivisection at University Edinburgh Materia Medica Department in 1880-81-82-83. Certificates Dispensing with obligation to kill in 1880-81-82-83.

Haycraft, John Berry. M.B.

Author of "On some Physiological Results of Temperature Variation," Trans. Roy. Soc. Edin., 1878.

Held a License for Vivisection at University Edinburgh Physiological Department and Materia Medica Department, or Department of Medical Jurisprudence in 1880 and 1881. No experiments returned in 1881.

Hayem, Georges, Rue de l'échelle 9, Paris. B. Paris, 1841. M.D. 1868; Prof. Med. Fac. Paris; Hospital Physician; Sub-Director of the Lab. of Path. Anat. (école des Hautes études); Editor of the Revue des Sciences Medicales.

Author of "Études sur les diverses formes d'encéphalite," Paris, 1868; "Des Bronchites, Pathologie générale et classification, Paris, 1869; "Des Hémorrhagies intra rachidiennes," Ibid, 1872.

Heger, Paul. Prof. Physiol. Univ. Brussels.

Author of "Étude critique et expérimentale sur l'émigration des lobules blancs, envisagée dans ses rapports avec l'inflammation."

Heiberg, H. Prof. Path. Anat. Christiania, Norway.

Author of "Om Hvirvelsøjlen hos nyfødte og dens Forhold til chorda dorsalis" (The spinal chord at birth and its relation to the chorda dorsalis) Norsk Magas. for Lægevidenskab., Vol. VIII. (1879), p. 292.

Made experiments on the cornea of rabbits, rats, cats, fowls, toads, &c.—*Vide Appen. Rep. Roy. Com.*

Heidenhain, Rudolph Peter Heinrich. B. at Marienwerder, West Prussia, 1834. Prof. of Physiol. and Microscopic Anat. Med. Fac. Breslau; Lect. Physiol. Institute.

Author of "Physiologische Studien," Berlin, 1856; "Die Vivisection im Dienste der Heilkunde," Leipzig, 1879; "Beiträge zur Kenntniss des Pancreas," Pflüger's *Archiv.*, Vol. X., p. 557; "Ueber die Absonderung der Fundusdrüsen des Magens," Pflüger's *Archiv.*, Vol. XIX., p. 148.

"The following observations, in so far as they relate to temporary fistula, were made in the summer of 1872; . . . those relating to permanent fistula belong principally to a series of experiments made with the students, Messrs. Jastrow, Langendorff and Körner. The principal results of both series proved that the secretion of the pancreas if arrested may be made to *continue*; or if present may be rendered more active. However, I must at once observe that the disturbances, the causes of which are still unknown to us, which almost invariably render useless all experiments on the pancreas, were also often present in those I am about to describe. . . .

"The experiments were invariably made on curarised animals. In such cases we have noticed the striking fact when the rapidity of secretion had been measured before and after curarisation, there was always a diminution during the curare anaesthesia, in contradiction to the result of Bernstein's experiments; in which the secretion increased under the influence of the poison." "*Beiträge zur Kenntniss der Pancreas.*"—Pflüger's *Archiv.*, Vol. X., pp. 606-607.

Permanent fistula of the stomach established in dogs, then they were curarised and the spinal marrow stimulated with electrodes to cause secretion from the pancreas. These experiments were undertaken with the aid of students.

Heinsius von A., M.D., Prof. Physiol., Leyden University.

Author of "Ueber die Eiweisskörper des Blutes," Pflüger's *Archiv.*, Vol. II., p. 1; "Ueber Serumalbumin und Eieralbumin und ihre Verbindungen," Pflüger, Vol. XII., p. 549.

Helmholtz-Hermann, Ludwig Ferdinand von. B. Potsdam, 1821; studied med. La Charité, Berlin; Military Surgeon, Potsdam; Prof. Anat. Acad., 1848; Prof. Physiol., Königsberg, 1849; Prof. Physiol., Bonn, 1855; Heidelberg, 1858; Prof. of Experimental Physics, Med. Fac., Berlin Univ., 1871; Corr. French Acad. of Sciences, 1870; Privy Councillor.

Author of "Ueber die Erhaltung der Kraft," Berlin, 1847; "Handbuch der Phys. Optik," Leipzig, 1856-1866; "Lehre von den Tonempfindungen," Brunswick, 1862, etc.

Henderson, Thomas Beath, 239, Bath Street, Glasgow. M.D., Glasgow, 1878; M.B. and C.M., 1871 (Univ. Glasg.); Mem. Med. Chir. Path. and Clin. Soc. Glasg., and Brit. Med. Assoc.

Contrib. "On the Inhalation of Phosphuretted Hydrogen," Journ. Anat. and Physiol., Vol. XIII.

Held a License for Vivisection at Glasgow Royal Infirmary

Medical School, 1878-79-80. Certificates Dispensing with obligation to kill, 1878-79-80. No Experiments returned in 1879 and 1880.

Henle, Frederick Gustav Charles. B. at Furth, Franconia, 1809. Studied med. at Heidelberg and Bonn; M.D., 1832; Prosector Anat. Museum, Berlin, 1837; Prof. of Micros. Anat. and Gen. Path., 1840; Prof. Anat. and Physiol. Univ. Zurich, 1844; Prof. Anat. Physiol. Path. and Anthropol., Heidelberg, 1852; Prof. at Göttingen.

Founder of "Journal der rationelle Medizin;" Author of "Ueber Schleim u. Eiterbildung," Berlin, 1838; "Vergleichende Anatomie des Kehlkopfes," Leipzig, 1839; "Pathologische Untersuchungen," Berlin, 1840; "Rationelle Pathologie," Brunswick, 1846; "Handbuch der Allgemeinen Anatomie," Berlin, 1841; "Handbuch der Systematischen Anatomie des Menschen," Brunswick, 1855; etc.

Henry, Arthur. Student at Physiol. Instit., Breslau.

Made experiments with Paul Wollheim at the instigation of Prof. Heidenhain on the pancreatic secretion of herbivorous animals, sheep, and rabbits—during two semesters—by creating biliary fistulas.—Pflüger's *Archiv*, Vol. XIV., p. 457, etc.

Hensen, V. Prof. experimental Physiol., Kiel University.

Author of "Ein einfaches Verfahren zur Beobachtung der Tönhöhe eines gesungenen Tons," *Archiv. f. Anat. u. Physiol.*, 1879, p. 155.

Hering, E. Prof. of experimental Physiol., Prague University.

Author of "Beiträge zur allgemeinen Nerven-und-Muskelpathologie," Sitzber. d. k. Akad. d. Wiss. (Wien) Vol. LXXIX., 1879; "Ueber Muskelgeräusche des Auges," *Ibid*; "Zur Erklärung der Farbenblindheit der Theorie der Gegenfarben," Prag, 1880; "Kritik einer Abhandlung von Donders," Prag, 1882.

Hermann, Ludimar. Prof. Physiol. and Med. Physics, Zurich Univ.

Author of "Grundriss der Physiologie des Menschen," Berlin, 1863; "Untersuchungen ueber den Stoffwechsel der Muskeln," Berlin, 1867; "Ein Beitrag zum Verständniss der Verdauung und Ernährens," Zurich, 1869; "Lehrbuch der experimentellen Toxicologie," Berlin, 1874; "Ueber schiefen Durchgang von Strahlenbündeln, etc.," Zurich, 1874; "Die Vivisectionsfrage für das grössere Publicum beleuchtet," Leipzig, 1877. Editor of "Centralblatt f. die Medicinischen Wissenschaften," Berlin, 1863, etc.

"Our experiments were intended to decide how far the objection raised on several sides was justified, that the results of the experiments made by Fritsch and Hitzig on the cortex of the cerebrum did not arise from the excitation of the cortex itself, but of the more internal parts. . . . The experiments were made during the summer term of 1874, all on middle-sized dogs, and were carried out successfully. . . . There were only six; as the results were all the same, there was no reason to make more of these cruel experiments. . . . I conclude with the remark that the experiments of Fritsch and Hitzig, however interesting and precious they may be, do not justify any conclusions concerning the functions of the cortex."—"Ueber elektrische Reizversuche an der Grosshirnrinde," Pflüger's *Archiv*, Vol. X., pp. 78-84.

"The advancement of our knowledge, and not utility to medicine, is the true and straightforward object of all vivisection. No true investigator in his researches thinks of the practical utilization. Science can afford to despise this justification with which vivisection has been defended in England."—*Die Vivisectionsfrage*.

Herzen, Alex. B. Russia, 1839. Prof. Physiol., Lausanne University. Studied Medicine and Natural History in England and Switzerland; joined Schiff at Florence, and became one of the promoters of the new scientific and philosophical movement in Italy. He afterwards retired to Sienna, where he pursued in solitude his studies on experimental Physiology. Prof. Physiol. at the Istituto superiore at Florence, 1877.

Author of "Popular Comparative Anatomy of the Lower Animals," London, 1862; "Les centres modérateurs de l'action réflexe," Turin, 1864; "Sul l'eccitabilità dei nervi tagliati," 1867; "Analisi fisiologica del libero arbitrio humana," 1868; "Gli animali martiri i loro protettori e la Fisiologia," Florence, 1874; "Una questione di Psicologia Sociale," 1871; "Cos'è la Fisiologia," Florence, 1877; "Lezione sulla digestione," Florence, 1877; "Il Moto psichico e la Coscienza," Florence, 1877; and in French a volume of "Récits et Nouvelles."

Hifberg (Dr.), Christiania University.

His, Wilhelm. B. at Bâle, 1831; studied med. at Bâle and Berlin, under J. Müller; Prof. Anat. and Physiol. Bâle, 1857; Prof. Physiol. Leipzig, 1872.

Author of "Crania Helvetica," Bâle, 1864; "Ueber die erste Anlage des Wirbelthierliebs," Leipzig, 1868; "Unser Körperform und das phys. Problem ihrer Entstehung," Leipzig, 1875. Contrib. to "Archiv. für Anthropologie" and "Archiv. f. Anatomie;" "Ueber die Anfänge des peripherischem Nervensystems" Arch. f. Anat. und Physiol., 1879, p. 456; "Abbildungen ueber das Gefässsystem der menschlichen Netzhaut und derjenigen des Kaninchens," Ibid, Vol. f., 1880, p. 224; "Die Lehre vom Bindesubstanzkeim," Ibid, 1882, p. 62.

Hitzig, Eduard. B. Berlin, 1838. Studied Berlin and Wurzburg. M.D., Berlin, 1862. Private Instructor in Internal Medicine Univ. Berlin, 1872. Prof. Mental Diseases, Zurich, and Director of the Lunatic Asylum of the Canton, 1875. Prof. of Pathology and Therapeutics of the brain, Med. Fac., Halle University.

Author of "Krankheiten des Nervensystems," in "Handbuch der speciellen Pathologie in Therapie;" "Untersuchungen ueber das Gehirn," Berlin, 1874; "Ziele und Zwecke der Psychiatrie," Zurich, 1876.

"Experiments on the extirpation of the cerebrum, furnished the material of a work in which Goltz imagines he has refuted the opinions expressed by me on the functions of this organ. I had already made jointly with Herr Fritsch a small number of analogous experiments, concerning the portion named by me, gyrus E; but later I carried out the experiments in a systematic manner on the whole convexity of the cerebrum. In the last series some observations are published in which I thought to have given the last and most uncontested proof of the localisation of the brain."—"Untersuchungen ueber das Gehirn," neue Folger, Reichert und Du Bois Reymond's Archiv., 1876, p. 692.

Holmgren, F. Prof. Physiol., Upsala University.

Contrib. "Ueber die wirkliche Natur der positiven Stromschwankungen bei der einzelnen Muskelzuckung" to Du Bois Reymond's Archives for 1871; "Ueber den Augenabstand der Farbenblinden," Arch. f. Ophthalmol., Vol. XXV., p. 135; "Ueber die Retinaströme," Untersuch. a. d. Physiol. Inst. 3d. Heidelberg, 1880.

"There is a poison (curare) which lames every spontaneous movement, leaving all other functions untouched. This venom is therefore the most cruel of all poisons. It changes us instantly into a living corpse, which hears and sees and knows everything, but is unable to move a single muscle, and under its influence no creature can give the faintest indication of its hopeless condition. The heart alone continues to beat." — *Holmgren, Physiology of present Times. Future*, 1868, p. 231.

Hoppe-Seyler, F. Prof. of Physiol. Med. Fac. Strasburg Univ.; Director of Physiol. Chem. Lab.

Author of "Med. Chem. Untersuchungen," Tübingen, 1871; "Physiologische Chemie," Berlin, 1879; "Ueber die Ursache der Athembewegungen," Centralb. f. d. Med. Weis., No. 51; "Ueber das Methämoglobin," Zeitzchr. f. physiol. Chemie, 1882.

Hoppe, I. Prof. extraord. Clin. Med., Med. Fac. Bâle University.

Horsley, Victor Alex. Haden, 129, Gower Street, W.C. Prof. Supt. of Brown Institution, 1884. M.B. Lond. and B.S. (Univ. Schol. and Gold Medallist in Surg.), 1881; F.R.C.S. Eng., 1883; (Univ. Coll.); Fell. Roy. Med. Chir. Soc.; Mem. Path. Soc.; Surg. Regist. (late House Surgeon) Univ. Coll. Hosp.; Asst. to Prof. of Path. Univ. Coll.

Author of "Report on Septic Bacteria," Rep. Med. Off. Loc. Govt. Bd.; (with Dr. Mott) "On the Existence of Organisms in Living Tissues," Journ. Physiol., Vol. III; (with Dr. Bastian) "Arrest of Development of Left Upper Limb associated with an Extremely Small Right Ascending Parietal Convolution," "Brain," Vol. III.

Held a License for Vivisection at University College, London; New Physiological Theatre and Physiological Laboratory with Curator's Rooms in 1881 and 1882. Certificates for Illustrations of Lectures, and for dispensing with obligation to kill in 1882. No experiments returned in 1881.

Horvath, Alexis. M.D., Kieff.

Author of "Beiträge zur Physiologie der Respiration, Pflüger's Archiv., Vol. XIII.; "Zur Abkühlung der Warmblüter," Pflüger, Vol. XII., p. 278.

Dogs and rabbits plunged up to the neck in freezing water.

Houckgeest, van Braam. Military surgeon, Amsterdam.

Author of "Untersuchungen über Peristaltik des Magens und Darmcanale," Pflüger's Archiv., Vol. VI., p. 266, 1872.

Cut away the abdominal walls of rabbits, substituting glass, in order to observe the perisaltic action of the intestines. Also placed rabbits in a bath, then cut open the abdomen, keeping the head above water, so as to allow the N. splanchnicus to be dissected out. This nerve, he states, is easier to find in a small, thin male rabbit after it has been kept fasting for 24 hours. Subsequent to this the nerve was acted upon by a Du Bois Reymond's apparatus. The animals invariably died after a period of from one to five hours.

Hughes, Jas. Stannus, 1, Merrion Square West, Dublin. M.D. Qu. Univ. Irel., 1864; F.R.C.S.T., 1844; L. 1838; L.M. Dub. Lying-in Hosp.; Vice-Pres. Path. Soc. Dub.; Mem. Counc. Surg. and Zool. Socs., Irel.; Corr. Fell. Med. Soc. Lond.; Surg. Lord-Lient.'s Household, Dub. Castle; Prof. of Surg. R.C.S.T.; Exam. in Surg. Queen's Univ. Irel.; Surg. Jervis St. Hosp.; Cons. Surg. Coombe Lying-in Hosp.; Surg. Convalescent Home, Stillorgan; formerly Surg. Gen. Disp.

Author of "A Treatise on Diseases of the Prostrate Gland," 1860; Contrib. "On Diseases of the Spinal Column," Dub. Med. Press, 1850; "Ulcers of the Lower Extremities, etc.," *Ibid.*, 1851; "Opium in Peritonitis, with Cases," Dub. Hosp. Gaz., 1856.

Held a License for Vivisection at Royal College of Surgeons Dublin Physiological Lecture Room in 1878-79-80-81-82-83. No experiments returned in 1881-82-83.

Huiziga (Dr.), Groningen University.

Author of "Ueber die Unerregbarkeit der Vorderen Rückenmarkstänge," *Pflüger's Archiv.*, Vol. III., p. 81.

Huxley, Thomas Hy., 4, Marlborough Place, St. John's Wood, N.W. B. Ealing, 1825. M.R.C.S. Eng., 1862 (Char. Cross); Ph. D. Breslau; LL.D. Edin., Dub. and Cantab.; Knt. of the Order of the North Star (Sweden), Pres. R.S.; Fell. Linn., Geol. and Roy. Med. Chir. Socs.; Mem. Anthropol. Inst. of Haarlem; Corr. Mem. Acad. Nat. Sci. Philadelphia, Roy. Soc. of Sci. Göttingen, Inst. of France, and Acad. of Berlin and St. Petersburg, etc., etc. Prof. Biol. Normal Sch. of Sci. and Roy. Sch. of Mines; late Exam. in Phys. and Comp. Anat. Univ. Lond.; F.R.C.S. 1883.

Held a License for Vivisection (no place named) in 1882. Certificate for experiments without Anæsthetics, 1882.

Author of "The Oceanic Hydrozoa," 1857; "Evidence as to Man's Place in Nature," 1863; "Lectures on the Elements of Comparative Anatomy," 1864; Elementary Lessons in Physiology," 1866-67; "An Introduction to the Classification of Animals," 1869; "Lay Sermons," 1870; "Manual of the Anatomy of Vertebrated Animals," 1871; "Critiques and Addresses," 1873; "Elementary Biology," 1875; "Manual of the Anatomy of Invertebrated Animals," 1877; "American Addresses," 1877; "Physiography," 1878; "The Crayfish: An Introduction to the Study of Zoology," 1880; "Science and Culture," 1881; numerous Memoirs in Trans. Roy., Linn., Zool., and Geol. Socs., etc.

"The following 'Lessons in Elementary Physiology' are primarily intended to serve the purpose of a text book for teachers and learners in boys' and girls' schools."—"Lessons in Elementary Physiology," London, 1866, Preface, p. 1.

"If the vessels of a limb of a living animal be tied in such a manner as to cut off the supply of blood from the limb, without affecting it in any other way, all the symptoms of death will set in. The limb will grow pale and cold, it will lose its sensibility and volition, the animal will no longer have power over it; it will stiffen, and eventually mortify and decompose."—*Ibid.*, p. 74.

"If in a living animal, the anterior roots of a spinal nerve be cut, the animal loses all control over the muscles to which that nerve is distributed, though the sensibility of the region of the skin supplied by the nerve is perfect. . . . On the other hand, if the end of

the sensory root connected with the trunk be irritated, no apparent effect is produced, while, if the end connected with the cord be thus served, violent pain immediately follows."—*Ibid*, p. 268.

Israel, James. M.D.; Chief Phys., Jewish Hosp., Berlin.

"On the 26th of March this year (1883), I inserted a small portion of infected tissue out of the peripleural abscess of a patient suffering from primary aktinomykosis of the lungs through an incision into the abdomen. The rabbit showed no symptoms of illness during life; the patient died. . . . The rabbit was killed June 12th, 1883. In the abdomen were found a number of swellings from the size of a cherry to that of a grain of hemp seed. . . . This gives the first proof of the possibility of transmitting aktinomykosis from man to animals. . . . Evidently the rabbit is not a very favourable subject for the development of this disease."—*Centralblatt für die Med. Wiss.*, No. 27, July 7th, 1883, p. 481-82.

Jacobson, H. Prof. Med. Fac. Berlin Univ. Lect. Dis. of Heart and Exp. Path., 1883.

Jäger, S. de. Prof. Vet. Coll., Utrecht; formerly Asst. Physiologist, Leyden.

Author of "Over de bloedsbeweging in de Longen," Leiden, 1879; "Die Lungen circulation und der arterielle Blutdruck," *Pflüger's Archiv*, Vol. XXVII., p. 163, &c.

James, Alexander, 11, Albion Place, Edinburgh. M.D. Edin. 1876; M.B. and C.M., 1872; F.R.C.P. Edin., 1877; (Univ. Edin.) Mem. (late Pres.) Roy. Med. Soc. Edin.; Mem. Med. Chir. Soc. Edin.; Lect. on Insts. of Med. and Clin. Med.; Edin. Sch. of Med.; late Med. Off. New Town Disp., House Surgeon Liverp. Infirm. for Childr., Res. Phys. Clin. Wards and Res. Surg. Roy. Infirm. Edin.

Held a License for Vivisection at Surgical Hall, Edinburgh, Dr. James' Room in 1879 and 1880. Certificates for Illustrations of Lectures 1879 and 1880.

Jankowski, K. W., Moscow, M.D.

Author of "Ueber die Bedeutung der Gefässnerven für die Entstehung des Oedems."—*Virchow's Archiv*, Vol. 93, Part II., Aug., 1883.

"Experiment I., July 24, 1882. Morphium injected into the vein in the front paw of a large dog. Complete narcosis followed immediately. Both hind feet were bound tightly together with an india-rubber band and immersed in water warmed to 70 degrees. The feet were held under the water about two minutes till the hair could be easily pulled out of the skin; then they were taken out of the water and untied. After this, the Nervus ischiadicus on the right side was cut through. About half-an-hour afterwards both feet showed signs of inflammation. They began to swell rapidly, and pustules filled with transparent matter appeared between the toes. On both sides the lymph vessels were now dissected out, and armed with cannulæ. To excite the flow of lymph the legs were pumped up and down every ten minutes for about five minutes at a time. . . . Two hours after this experiment the dog died, probably from the excessive dose of morphium injected."—"Ueber die Bedeutung der Gefässnerven für die Entstehung des Oedems," *Virchow's Archiv*, Vol. XCIII., p. 269.

Nineteen similar experiments on dogs were made in the Pathological Institute at Leipzig.

Jennings, Chas. Egerton, London Hospital, E.; and Abbey House, Malmesbury, Wilts. L.R.C.P., London, 1881; M.R.C.S. Eng. and L.S.A., 1881 (Lond. Hosp.); Obst. Schol. 1880; Fell. Obst. Soc.; Mem. Brit. Med. Assoc.; Res. Acc. (formerly House Phys.), Lond. Hospital; late Clin. Asst. Roy. Lond. Ophth. Hosp.

Author of *Transfusion; its History, Indications, and Modes of Application*," Contrib. "Treatment of Hydrophobia by Curara," "Lancet," 1881; "The Intravenous Injection of Fluid for Severe Hæmorrhage," Ibid, 1882; "The Morbid Anatomy and Pathology of Hydrophobia," Ibid, 1882.

Held a License for Vivisection, and performed experiments at the Museum, Theatre, and Lecture Rooms of Guy's Hospital, up to 2nd December; also, at Physiological Laboratory and Museum of the University of the Durham College of Medicine, 1883. Certificate dispensing with the obligation to kill, same year.

Experiments on transfusion.—*Lancet*, Vol. II., 1884, pp. 364-6.

Jolyet, F. Prof. Med. Fac. Bordeaux, Exper. Med. 1877.

Author of "Nouvelles recherches sur le nerf pneumogastrique, démontrant que les filets originaux de ce nerf, avant tout anastomoses, possèdent, chez le chien une fonction motrice propre sur l'œsophage et sur l'estomac."—*Gaz. Med. de Paris*, 1879, No. 6, p. 72.

Kaess, C. M.D. Prosector, Giessen.

Articles in Eckhard's Beiträge, X., 1883.

Experiments on dogs.

Kahler, O. Prof. extraor. Univ. Prague; Lect. Dis. of Spine.

Author of "Weitere Beiträge zur Pathologie und pathologischen Anatomie des Centralnervensystems" (jointly with Pick) Arch. f. Psychiat., Vol. X., p. 179, 1879; Ueber die Noë'sche Thermosäule," Prag. Med. Wochenschr. 1882, No. 47.

Injected wax into the spinal column of dogs to study the effects of pressure on the spine.—*Zeitschrift f. Heilkunde* (Prague and Leipzig), Vol. III., 1882, p. 187.

Kelsch (Prof.) Prof. Path. Anat. Lille Med. Faculty.

Kinberg, J. G. H., Stockholm. Prof. Med. and Chir. Inst.

Klebs, Edwin. B. 1834, Königsberg. Studied univs. Königsberg, Würzburg, Jena, and Berlin; Asst. Physiol. Lab. Königsberg; assistant to Virchow, 1861; Prof. Path. Anat., Berne, 1866; Prof. at Würzburg, 1871; Prof. at Prague, 1873; Lect. on Path. Anat., Path. Histology and Path. Chemistry Med. Fac. Univ. Zurich, 1883.

Author of "Ueber die Aufgaben und die Bedeutung der experimentellen Pathologie" (Inaugural Discourse Univ. Zurich), Leipzig, 1882; "Ueber Symbiose Ungleichartiger Organismen," Biol. Centrabl., Vol. II., Nos. 10, 11, 13.

Klein, Emanuel. M.D., F.R.S. Assist. Prof. Lab. Brown Instit., Wandsworth Road; Lect. Histol. at Med. Sch. St. Bartholomew's Hosp.; formerly Prof. Histology Univ. of Vienna.

Author of first section of "Handbook for the Physiological Laboratory;" "Ein Beitrag zur Kenntniss der Structur des Zellkernes und der Lebererscheinungen der Drüsenzellen" in Centrabl. f. d. Med. Wiss. No. 17 (1879), p. 289; "Observations on the Glandular Epithelium and Division of Nuclei in the skin of the newt," Quart. Journ. Mic. Sci., No. LXXV. (1879), pp. 261—404; "On the termination of the nerves in the mammalian

cornea," *Ibid.*, Oct., 1880, p. 459; "The organ of Jacobson in the dog," *Ibid.*, July, 1882, p. 299; "The Anatomy of the Lymphatic System," 1883, London; "Atlas of Histology" (jointly with Dr. Noble Smith), London, 1879.

(*Chairman*) (3,538): What is your own practice with regard to the use of anesthetics in experiments that are otherwise painful? (*Dr. Klein*): Except for teaching purposes, for demonstration, I never use anesthetics where it is not necessary for convenience. If I demonstrate, I use anesthetics. If I do experiments for my inquiries in pathological research, except for convenience sake, as for instance on dogs and cats, I do not use them. On frogs and the lower animals I never use them. (3,539). When you say that you only use them for convenience sake, do you mean that you have no regard at all to the sufferings of the animals?—No regard at all. (3,540.) You are prepared to establish that as a principle which you approve?—I think that with regard to an experimenter, a man who conducts special research, and performs an experiment, he has no time, so to speak, for thinking what will the animal feel or suffer. His only purpose is to perform the experiment, to learn as much from it as possible, and to do it as quickly as possible. (3,541.) Then for your own purposes you disregard entirely the question of the suffering of the animal in performing a painful experiment.—I do. (3,542). Why do you regard it then when it is for a demonstration?—Because I know that there is a great deal of feeling against it in this country, and when it is not necessary, one should not perhaps act against the opinion or the belief of certain individuals of the auditorium. One must take regard of the feelings and opinions of those people before whom one does the experiment. (3,543.) Then am I wrong in attributing to you that you separate yourself entirely from the feeling which you observe to prevail in this country in regard to humanity to animals?—I separate myself as an investigator from myself as a teacher. (3,544.) But in regard to your proceedings as an investigator, you are prepared to acknowledge that you hold as entirely indifferent the sufferings of the animal which is subjected to your investigation?—Yes. (3,546.) Do you believe that that is a general practice on the Continent, to disregard altogether the feelings of the animals?—I believe so. (3,547.) But you believe that, generally speaking, there is a very different feeling in England?—Not among the physiologists; I do not think there is. (3,553.)—*Min. of Ev. R. Com.*, London, 1876.

Köbner, Heinrich. Prof. in Berlin.

Author of "Uebertragungsversuche von Lepra auf Thiere."

Experiments to give leprosy to animals.—*Virchow's Archiv.*, 88 vol., p. 282.

"One monkey, two guinea-pigs, two young white rats, one white mouse, two rabbits, one pigeon, three eels, one mud-fish, and one frog were inoculated in several parts of the body with leprosy matter, and also small portions of tissue impregnated with bacilli were engrafted. Leprosy did not break out in any of the animals."—*Note by O. Israel, Centralbl. f. Wiss. Med.* No. 5, 1883, p. 79.

Koch, Heinrich Hermann Robert. M.D. Geheimrath. Direct. of the Pathol. Instit. of Sanit. Med. Berlin.

"You saw the dog which was injected with a minimum quantity of tubercle bacilli. The injection was made in the abdominal cavity, and produced an exquisite tubercular peritonitis. Nevertheless, the dog finally recovered entirely, and seemed perfectly

well. Then the same dog was used again, and a large number of bacilli were introduced into the abdominal cavity. You will see that the dog is fatally ill. Now, if one attack conferred immunity, it ought to have been impossible to produce this second attack. Hence I do not think it possible to prevent the disease in that way, nor do I think it necessary to try it."—"Dr. Robert Koch interviewed," *Med. Times*, Aug. 26th, 1882, p. 255.

"The result of Koch's inoculation experiments he (Dr. Formad) discredited, because the successful ones had been made only on animals that have a very strong predisposition to tuberculosis, and contract it from inoculation of non-specific substances, while others, which were claimed to be successful, he regarded as cases of pseudo-tuberculosis. The view in regard to the bacilli tuberculosis to which Dr. Formad inclined, was that they do not cause the disease, while it is likely that they do 'condition the fatal disease.' The remarks were received with marked interest, and were followed by a brief discussion, participated in by Drs. Wood, Gross, Tyson, Bartholow, Cohen, and others. Some of the speakers seem to have adopted Koch's views, and it was spoken of as a matter of congratulation that one so well fitted as Dr. Formad should have presented the arguments against them, since the truth would be arrived at all the more surely if the new doctrine were put upon its defence, and not allowed to establish itself without due scrutiny."—*Philadelphia Med. News*, Oct. 28, 1882. (Reprinted in *Med. Times*, Dec. 2, 1882.)

"Dr. Koch's conclusions enjoy a very considerable *succès d'estime*, but that esteem would perhaps be less were it clearly understood that the original intention, and indeed the justification, of the method of dry cultivation has been quietly dropped, while the method itself has been put to a use for which it is not at all suited."—*Med. Times*, July 15, 1882, p. 78.

"As yet we have no certain instance of animals falling spontaneously ill of cholera in periods of cholera. All experiments also, which have hitherto been made on animals with cholera substances, have either given a negative result, or, if they were said to give a positive result, they were not sufficiently supported by evidence, or were disputed by other experimenters. We occupied ourselves, nevertheless, in the most careful and detailed manner, with experiments on animals. Because great value must be laid on the results on white mice obtained by Thiersch. I took fifty mice with me from Berlin, and made all kinds of experiments on them," but . . . "our mice remained healthy. We then made experiments on monkeys, cats, poultry, dogs, and various other animals that we were able to get hold of; but we were never able to arrive at anything in animals similar to the cholera-process. . . . Hence, I think, that all the animals on which we can make experiments, and all those, too, which come into contact with human beings, are not liable to cholera. . . . We must, therefore, dispense with them as a material for affording proofs.—Koch's "Address to the German Board of Health," "*Brit. Med. Journ.*," Sept. 6, 1884, p. 454.

Kölliker, Rudolph Albrecht. B. 1817, at Zurich; Studied Univ. Zurich, Bonn, and Berlin; For. Asst. to Henle, M.D., Zurich, 1843; Prof. Physiol. and Comp. Anat., Zurich, 1845; Prof. at Wurzburg, 1847.

Author "Handbuch der Gewebelehre des Menschen, für Aertzte und Studierende," Leipsig, 1852; "Entwicklungsgeschichte des

Menschen und der Höheren Thiere," Leipzig, 1861; "Untersuchungen ueber die Letzten Endigungen der Nerven," Leipzig, 1862 (in progress).

Krabbe, H. M.D.; Prof. of Physiol. and Anat. at Roy. Vet. Coll., Copenhagen.

Kraft (Dr.), Breslau. Asst. Prof. at the Path. Institute.

Kries, J. Von. Prof. Univ. Freiburg in Baden; Lec. Physiol. Movement and Sensation, Physiol. Inst.

Author of "Untersuchungen zur Mechanik des quergestreiften Muskels," Arch. f. Anat. und Physiol., Vol. for 1880; "Die Gesichtsempfindungen und ihre Analyse," Arch. f. Physiol, 1882 (Supplement).

Krivoratow, M., Moscow. Medical Student Strasburg; pupil of Prof. Goltz.

Kronecker, H., 35, Dorotheenstrasse, Berlin. Prof. Extraor. Physiol. Univ. Berlin; Lect. Exper. Physiol.

Author of "Die Unfähigkeit der Froschherzspitze, elektrische Reize zu summiren," Verhandl. d. physiol. Gesell. zu, Berlin, May 16, 1879; Co-editor (with Senator) of "Centralblatt für die medicinischen Wissenschaften."

Made experiments jointly with Dr. Theodore Cash in the Physiological Institute in Berlin.

Kueltz, E. Prof. Med. Fac. Marburg University; Exam. in Physiol. Lect. on Physiol. of Sensory Organs, 1883.

Author of "Beiträge zur Lehre von der Glycogenbildung in der Leber," Pfüger's Archiv., Vol. XXIV., 1880; "Ueber die Schicksale des Chloralhydrates und Butylchloralhydrates im Thierkörper," Ibid., Vol. XXVIII., 1882.

Made experiments in the Physiol. Lab. Univ. of Marburg.

Kühne, W. Prof. of Experimental Physiol. Med. Fac., Heidelberg University.

Author of "Ueber künstlichen Diabetes bei Fröschen," Göttingen, 1856; "Myologische Untersuchungen," Berlin, 1860; "Ueber die peripherische Endorgane der motorischen Nerven," Leipzig, 1862; "Untersuchungen ueber das Protoplasma und die Contractilität," Leipzig, 1864; "Ueber das Verhalten des Muskels zum Nerven," Untersuchungen aus dem physiol. Institute d. Universität, Heidelberg, Vol. III., 1879; "Notiz ueber die Netzhautfarbe belichteter menschlichen Augen," Ibid., Vol. III., 1879; "Beobachtungen ueber die Absonderung des Pancreas" (jointly with Lea), Ibid., Vol. II., 1882.

Kussmaul, Adolf. B. 1822, at Graben, near Carlsruhe; studied at Heidelberg and Wurzburg; Military surgeon in Baden, 1848; Prof. extraord. Univ. of Heidelberg, 1857; Prof. Med. Erlangen, 1859; Prof. Freiburg, 1863; Prof. Strassburg, 1876.

Author of "Die Entwicklungs-Phasen der exacten Medicin," "Ueber die Ursachen und den Gang unseres Ablebens," Freiburg, 1866; "Zwanzig Briefe über Menschenpocken und Kuhpockenimpfung," Freiburg, 1870; jointly (with Tenner); "Untersuchungen zur Natur-Lehre des Menschen und der Thiere," 1856; "Untersuchungen ueber Ursprung und Wesen der fallsuchtartigen Zuckun-

gen bei der Verblutung so wie der Fallsucht überhaupt," Frankfurt, 1857.

"For all those who do not hold the view that words and thoughts originate from sources above and outside the nerve substance, the localization of the functions of speech in portions of the cortex follows as a necessary postulate of logic. . . . Physiological Experiment, as we might expect, leaves us here in the lurch."—Art. "Disturbances of speech," *Ziemssen's Cyclopedia of Medicine*, Vol. XIV., p. 720.

Laborde, J. V., 15, Rue de l'Ecole-de-Médecine, Paris. Prof. Pract. Physiol., Pract. Courses.

Chief Editor of the "Tribune Médicale."

Experimented (30th April, 1884), with the head of the decapitated criminal, Campi, by transfusing the blood of a living dog into it, bringing back a hideous semblance of lifelike motions.

Lacerda (M.) de, Rio de Janeiro.

Injected snake poison under the skin of dogs, rabbits, monkeys, and guinea-pigs to try the effect of permanganate of potash as an antidote.

Landois, Leonard. B. Munster, 1837; Stud. and Asst. at Physiol. Inst., Greifswald; Prof. extraord., 1868; Prof in ord. Physiol. and Dir. Physiol. Inst., 1872; Prof. Micros. Anat., Histol., and Exper. Physiol. Med. Fac., same place, 1883.

Author of: "Lehrbuch der Physiologie des Menschen," Vienna, 1879-80; "Ueber tönende Vocal-flammen," *Centralb. f. d. Med. Wiss.* No. 18, 1880, p. 321.

Lankester, Edwin Ray, M.A., F.R.S. B. 1847, London; Educated St. Paul's School, and Christ Ch., Oxon; Fell. and Lect. Exeter Coll., Oxford, 1872; Prof. Zool. and Comp. Anat. Univ. Coll., Lon., 1875; Fellow Roy. Soc., 1875.

Author of: "A Monograph of the Fossil Fishes of the old red Sandstone of Britain," Part I., 1870; "Comparative Longevity," 1871; "Contributions to the Developmental History of the Mollusca," 1875; and the English Edition of Hækel's "History of Creation." Contrib. to "Athenæum, Academy, Nature," Chief Editor of "Quarterly Journal of Microscopic Science."

" . . . He has taken a prominent part in the defence of Scientific Experiment on live animals."—*Men of the Time*, 10th Edit., p. 604.

"If you allow experiment at all, you must admit the more of it the better, since it is certain that for many years to come the problems of physiology demanding experimental solution will increase in something like geometrical ratio instead of decreasing."—E. Ray Lankester, *Spectator*, Jan. 10, 1874.

Lange, O. B. 1834. Path. Lect. Univ. Copenhagen, 1877; formerly Asst. to Prof. Schiff, Physiol. Lab., Florence.

Editor of "Hospital Journal."

Langendorff, Oscar. Prof. Physiol. Med. Fac. Univ. Königsberg.

Author of "Versuche ueber die Pancreas-Verdauung der Vögel," *Mueller's Archiv*, 1879; Contrib. to *Centralb. f. d. Med. Wiss.*, *Archiv. fuer Anat. u. Physiol.*, etc.

Found by experiment that after frogs had been immersed for several hours in oil or water, or after they had been suffocated by ligation of the aortic bulb, their muscles had an acid reaction.—*Med. Centralb.*, 1882, No. 50.

Langley, J. N. M.A., St. John's Coll., Camb.

Author of "The action of Pilocarpin on the sub-maxillary gland of the dog," *Studies from the Physiol. Lab. Camb.*, Part III., 1877, p. 42. "On the changes in serous glands during secretion," *Journ. of Physiol.*, Vol. II. (1879), p. 261; "On the structure of serous glands in rest and activity," *Proc. Roy. Soc. Lond.*, 1879, p. 377; "Preliminary account of the structure of the cells of the liver and the changes which take place in them under various conditions," *Proc. Roy. Soc.*, Vol. XXXIV., 1882, p. 20.

"The sub-maxillary gland of the dog was chosen for experiment, owing to its exposed condition, and the comparative ease with which its nerves can be isolated; a few experiments were made on the parotid, but these were not increased in number, since there seems little reason to doubt that that which is true for one salivary gland is also true for the rest. . . . In observing the flow of blood all the veins going to the jugular were tied, except the veins coming from the gland; then either the jugular was tied and cut across on the peripheral side of the ligature, and the blood allowed to run into a narrow test tube . . . ; or a cut was made just at the division of the jugular, the jugular itself clamped, and the blood collected as before. . . . The pilocarpin was injected sometimes into the saphena vein, and sometimes through the facial artery direct into the gland, in the manner described by Heidenhain. . . . In every case the stimulus used was a Daniell's Cell with a Du Bois Reymond's induction apparatus."—*Studies from the Physiol. Lab. Camb.*, Part III. (1877), pp. 44, 45, 46.

Also experiments on dogs, rabbits, frogs, and toads.

Held a License for Vivisection at Cambridge University Physiological Laboratory New Museum in 1878-79-80-81-82-83. Certificates for Illustrations of Lectures in 1878-79-80-81-82-83. Certificate dispensing with obligation to kill in 1879.

Lannegrace (Dr.), Montpellier. Prof. Physiol. Med. Fac., Montpellier.

Lanzillotti-Buonsanti, Nicola. B. Ferrandina, 1846; Studied Salerno and Naples; Chir. Aast. Milan, 1871; Prof. 1873; Phys. and Vet. Sur. Basilicate; Direct. Chirurg. Clinic and Prof. of Surg. and Exper. Physiol. High School for Vet. Med., Milan.

Author of "Sulla struttura dei tendini, ricerche istologiche," Milan, 1871; "Manuale di Ostetricia Veterinaria," Milan, 1872; "Trattato di Patologia e Terapia chirurgica generale e speciale degli animali domestici," Milan, 1873; "La Medicina sperimentale e le Scuole Veterinarie," Milan, 1873, &c. Founded, 1878, the journal "La Clinica Veterinaria, Rivista di Medicina e Chirurgia pratica degli Animali domestici."

Lapper, Edwin, 36, Highfield Road, Rathgar, Co. Dublin. L.K.Q.C.P. Irel., 1876 (Ledw. Sch. Dub.); Fell. Chem. Soc. Lond.; Lect. on Chem. Ledw. Sch. of Med. Contrib. to Dub. Journ. Med. Sci. 1876.

Held a License for Vivisection at Royal College of Surgeons, Dublin, Physiological Laboratory and Lecture Room in 1878. No experiments returned.

Lassègue, Jean Louis. B. Paris, 1800.

Author of "Recherches Physiologiques et Chimiques pour servir à l'histoire de la digestion," Paris, 1825.

Bound the thoracic duct of dogs, death following 50 days after the operation.

Latschenberger, Joh. M.D.; Prof. extraord. Physiol. Chem. Univ. Freiburg.

Joint Author, with Deahna, of "Beiträge zur lehre von der reflectorischen Erregung der Gefässmuskeln," Pfüger's *Archiv*, Vol. XII., p. 157.

Made experiments jointly with Deahna.

"We first set ourselves the task of studying the effects of blood pressure in long continued stimulation of the ends of sensory nerves. The animals experimented upon were rabbits, dogs and cats. . . . The nerves experimented upon were the N. vagus, N. depressores, and N. ischiadicus. After the nerve was cut through, the central end was stimulated. The nerves in the neck were in most cases drawn outwards and laid upon the electrodes in such a manner that the stimulated portion should be completely surrounded by air."—*Beiträge zur Lehre von der reflectorischen Erregung, &c.*, pp. 159, 160.

Lautenbach, B. F. M.D.; Ph. D. Asst. Physiol. Lab. Geneva.

Author of "On absorption without circulation," *Journ. of Physiol.*, Vol. II. (1879), p. 110; "The physiological action of heat," *Ibid.*, pp. 1 and 302; "Saponin in its relation to Physiology," *Journ. of Nerv. and Mental Diseases*, Vol. IV. (1879), No. 3 (N. Series), p. 393.

Made experiments, with the assistance of Prof. Schiff, by tying the portal veins of dogs, &c., which caused death in one or two hours in the dog, and less in cats and rabbits.—*Philadelphia Med. Times*, May 26th, 1877.

Lazarus, Moritz. B. Filehne, in Posen, 1824. Prof. Philos. Bern; Prof. Milit. Acad. Berlin, 1868.

Contrib. to "Zeitschrift für Klinische Medicin."

Made experiments on dogs and sheep.

Lea, A. Sheridan. Trin. College, Cambridge. Physiol. Lab. New Museum.

Joint Author (with J. R. Green) of "Some Notes on the Fibrine Ferment," *Journ. Physiol.*, Vol. IV., p. 380.

Held a License for Vivisection at University Cambridge Physiological Laboratory New Museum, 1878-79-80-81-82-83. Certificates for Illustrations of Lectures in 1878-79-80-81-82-83. No experiments returned in 1878.

Lebedeff, Alexander. Physician, Moscow, Russia.

Made experiments in the Physiol. Institute, Leipsig, 1882.

Lebedoff, S. A. Asst. Phys., St. Petersburg.

Made experiments in the Pathological Institute, Giessen, on the secretion of hæmoglobin by the kidneys.—*Virchow's Archiv.*, Vol. XCI., p. 2.

Legg, John Wickham, 47, Green Street, Park Lane, W. M.D. Lond., 1863; M.B., 1867; M.R.C.P. Lond., 1869; Fell. Roy. Med. Chir. Soc.; Mem. Path. Soc.; Casualty Phys. and Demonstrator Morbid Anat. St. Barthol. Hosp.

Author of "On the Changes of the Liver which follow Ligature of the Bile Ducts;" and various Papers in *St. Barthol. Hosp. Reps.*, *Brit. Med. Journal*, *Journ. Anat. and Physiol.*, etc., etc.

"During the past winter, I have made several observations upon the changes which follow ligature of the bile ducts in animals. The animals used were cats; these seem to survive the operation better than dogs. Most observers find that dogs live only five to ten days after. The way in which the ligature was applied was as follows:—The animal was first secured in a Czermak's holder, and chloroform given largely, so as to secure a deep narcosis. . . . A cut is then made through the linea alba from the xiphoid cartilage downwards for about two inches. . . . Pushing aside to the left the stomach and duodenum, and raising the free edge of the liver, the bile ducts are seen coming from the liver and gall bladder. . . . A ligature is then put around the common duct and tied close to the duodenum; another is tied tightly on the duct, about half an inch nearer to the liver, and the duct between the two ligatures divided by a pair of scissors, the vessel being held out from the portal vein for that purpose. In two of the cats the bile found its way again into the intestine; in the later operations, therefore, I removed altogether about half an inch of the common duct as is done in making biliary fistulæ. The belly walls were then brought together with ordinary sutures. It is well to place these close together, as I lost three of the cats from the giving way of the sutures and consequent prolapse of the bowels. All the operations recorded in this paper were done in the pharmacological laboratory of my friend and colleague, Dr. Brunton. . . .

"*Exper. I.*, Jan. 24, 1873.—Large tabby cat, weighing 8½ lb.; very fat; bile ducts tied double and cut. The cat died probably on Jan. 26. Examined on Jan. 27. Weather frosty. . . .

"*Exper. II.*, Jan. 24, 1873.—Black she cat, weighing 6 lb. 6¾ oz. Bile duct tied double but not cut. Animal pregnant. The cat died on Jan. 26. Examined on Jan. 28. . . .

"*Exper. III.*, Feb. 3, 1873.—Large tabby cat, weighing immediately after operation 7 lb. 3½ oz. Animal very fat; bile duct tied, but not cut. Feb. 6.—Cat seems to be dying; it is unable to stand, but lies on side mewing. Feb. 7.—Found dead at 11 a.m. in the same place where left yesterday. . . .

"*Exper. VI.*, Feb. 3.—A cat not fully grown, very wild, scarcely any fat on body, weighing immediately after the operation 3 lb. 5 oz. Bile ducts tied double, but not cut. The animal nearly died under the chloroform, but recovered with artificial respiration. Cat last seen alive on Feb. 7. . . . Found dead on morning of February 12, and already much decomposed. Cause of death, prolapse of bowels. . . .

"*Exper. XVI.*, June 27.—Black and white cat, well nourished, full grown. Bile duct tied double and piece cut out. July 3.—As the cat was now very weak, and seemed about to die, it was determined to make the diabetic puncture. The cat was therefore laid prone, a cut made through the skin over the occipital protuberance, and the chisel applied immediately underneath this. After dividing the occipital bone, the chisel was passed in a direction downwards and forwards, so as to cut the line made by joining the two auditory meatus. The chisel was pushed on until it met with the basilar bone, and was then withdrawn. Operation was over at 12.30.

Before the operation the cat had languidly taken a little milk."—
"On the changes in the Liver which follow Ligature of the Bile Ducts,"
Barth. Hosp. Reps., Vol. IX., p. 161, etc.

Lemoigne (Prof.), Milan. Mem. Council Milanese Società Zoophila.

Author of "Relazione Sull' Idrofobia," 1882.

Leopold, G. Prof. Univ. Leipsig.

"Professor Leopold, of Leipsig, has recently carried out some experiments of the above kind, the results of which we think it well to summarise, seeing that English physicians are prevented by foolish legislation from making any such researches themselves. . . . Dr. Leopold therefore proceeded thus: he opened the abdomen and uterus of a pregnant animal, and then the abdomen of one not pregnant, and transferred in some experiments the embryo only, in others the embryo and its membranes and placenta, from the uterus of one animal to the abdominal cavity of the other. Then he closed the wound and observed the result. Rabbits were the animals used. . . . As to the result, the experiments fall into two groups—one in which peritonitis followed, from which the animals soon died; and the other in which they survived, and the transplanted embryo became encapsuled. . . . In the cases in which no peritonitis was excited, the animals were killed at periods varying from three to seventy days after the operation."—*Med. Times and Gazette*, Jan. 14, 1882, pp. 41, 42.

Lépine, R., Lyons. M.D. Paris, 1875. Prof. Medicine Med. Faculty.

Author of "De la localisation dans les Maladies cérébrales," Paris, 1875; jointly (with Lannois) of "Sur la maniere differente dont se comportent les parties supérieure et inférieure de l'intestin grêle au point de vue de l'absorption et de la transsudation," Arch. de physiol. norm. et path. 1883, p. 93.

"The authors pursued the following methods in their experiments, which were made solely on dogs: After opening the abdomen in the linea alba, a portion of the smaller intestines was drawn out, and ligatures which at first were not closed were applied to the upper and lower part; above and below the ligatures the intestine was cut open with very fine scissors, and rinsed out with a seven per cent. solution of salt. Then the lower ligature was closed, and the solution injected into the upper opening, the reabsorption of which is to be tested. While the syringe was being withdrawn the upper ligature was also secured. A portion of the lower end of the small intestine was then submitted to the same process; but in this case a longer portion was taken out to compensate as much as possible for the smaller size of the lower end of the intestine. . . . After the bowels had been replaced the wound was sewn up, and the dog set at liberty; and after a certain time—generally an hour or an hour and a-half—killed, and the contents of the tied loops were examined.—*Centralb. f. d. Med. Wiss.*, 1883, p. 679.

Lesser, A. Prof of Toxicology, Med. Fac., Berlin University.

Lesser, Baron Von L. L. Prof. at Private Policlinic, Med. Fac., Leipsig University. Path. Institute.

Leube, Wilhelm Olivier. B. Ulm, Wurtemberg, 1842; studied Med. Tübingen; M.D. 1866; Univs. Munich and Berlin; studied Physiol. under Du Bois Reymond and Rosenthal, and Physiol. Chem. under Kühne; First Asst. Ziemssen's Clinic, Erlangen, 1868; Prof. extraord., 1872; Prof. Med. Clinic, Jena, same year; Prof. Erlangen, 1874.

Author of "Untersuchungen über die Strychnine-wirkung und deren Paralysisirung durch künstliche Respiration," Du Bois Reymond's Archiv, 1867, p. 629. Contrib. to "Moleschott's Untersuchungen," Virchow's and Du Bois Reymond's Archiv, &c.

Made experiments with strychnine on various animals.

Lewaschew (Dr.), St. Petersburg.

"A most careful and valuable series of experimental researches on the influence of the nervous system in the causation of disease of the vessels has been contributed to the current number of Virchow's Archiv., by Dr. Lewaschew, of St. Petersburg. . . . The method of investigation is worthy of mention. Generally the chief nerve trunks of the hinder extremities of dogs were the parts subject to irritation by means of a solution of muriatic or sulphuric acid; it was found that rabbits and cats were unfit for this continuous form of stimulation, because the action of the acid on the exposed nerve trunk brought about gangrene; as a strong stimulus was wanted milder means could not be employed."—*Lancet*, June 2nd, 1883. p. 962.

Dr. Lewaschew drew a thread moistened with acid through the nervus ischiadicus of the one leg to set up an irritation in the nerve. At intervals of from three to six days a thread was sewn nearer the peripheric end of the nerve. This was continued till the death of the animals. Some died rapidly of gangrene of the extremities and septicoemia, others at the end of two to four weeks only of putrid infection and dysentery; many, however, supported the operation for two or four months. Some of the animals became seized with epileptic fits, which increased till life ended.—*Petersburg Med. Wochenschrift*, Vol. XXXI., 1880.

Lewes, George Henry. B. London, 1817; d. 1878.

Studied med., anat., and physiol.

Author of "On the spinal cord," 1858; "The nervous system," 1859; "Physiology of Common Life," 1860; "Aristotle," 1864; "Problems of Life and Mind," etc.

"A triton whose cord had been divided some weeks was completely cut in two. The head-half immediately began crawling away with great activity, which, as this half contained the heart, and almost all the viscera, was not surprising. The tail half remained for some time in a standing posture, and then began to crawl forward. After three steps it paused, remaining quiet during five minutes, and began again, but feebly. The tail moved spontaneously, but with great slowness; when it was touched both tail and legs moved. I then placed it under a glass, with a moistened sponge inside to prevent evaporation from the skin, and left it there for two hours, watching its spontaneous, though very languid movements. If any reader remains still unconvinced, I can only recommend him to divide the spinal chord of a frog a little below the shoulders, and keep the animal for some days or weeks (care must be taken to prevent water getting to the cord, as that soon kills the animal), watching it, and testing its sensibility."—*Physiol. Com. Life*, Vol. II., pp. 255-6.

"Marshall Hall reports the case of a man in whom accident had destroyed all sensation and voluntary motion, yet who drew up his legs when they were tickled, without once feeling the sensation of tickling. . . . This case is constantly cited, and is, indeed, very striking. It seems to have a far greater value than any experiments on animals can have, because we cannot question animals as to their sensations; we do not *know* whether they feel or not. We can only infer: whereas we can interrogate the human patient."—*Ibid*, p. 861.

"Has performed a great many experiments (6,354), nearly all relating to the nerves, (6,365), mostly on frogs and other cold-blooded animals (6,357), and not more than a dozen rabbits and pigeons in a dozen years under anæsthetics (6,361-4). . . . Could not himself bear to experiment on dogs or cats (6,360, 6,379), rabbits would nearly always do instead (6,413-7)."—*Digest Ev. R. Com.*, p. 41.

Lewin, L. M.D. Asst. at the Pharmacol. Instit., Berlin.

Author of "Untersuchungen ueber Wirkung und Verhalten des Tannins im Thierkörper."—*Virchow's Archiv.*, Vol. LXXXI., 1880; "Untersuchungen ueber das chemische Verhalten der Folia Uvae Ursi im Thierkörper."—*Virchow's Archiv.*, Vol. XCII., 1883.

Made experiments on rabbits with tannin and other substances.

Leyden, Ernst Victor. B. Danzig, 1832. Studied Med. Chir., Inst. Friedrich Wilhelm, Berlin; Milit. Surg. Dusseldorf, Danzig, Gumbinnen and Königsberg; Battailon Surg. Berlin, 1862-65; then Prof. and Direct. Med. Clin. Polyclin. Königsberg; Prof. Strasburg, 1872; succeeded Traube, Berlin, 1876; Privy Councillor in Med. affairs; Prof Path. and Therap., Direct. Med. Clinic, Berlin.

Author of "Beiträge und Untersuchungen zur Physiologie und Pathologie des Gehirns," *Virchow's Archiv.*, Vol. XXXVII., p. 519; Editor "Zeitschrift fuer Klinische Medecin."

Inventor of an instrument which can be screwed into an opening made in the skull of dogs to facilitate the study of the movements of the then exposed brain. Injected blood of patients suffering from pneumonia into guinea-pigs.

"Nasse and Rosenthal, but especially Leyden, had, a few years ago, studied the effects of pressure and agitation on the functions of the brain mass. Leyden injected a solution of sodium chloride between the skull and dura mater. A more extended series of experimental investigations was subsequently undertaken by Dr. F. Pagenstecher. Pagenstecher injected a mixture of white wax and tallow heated to 50° C. between the skull and dura mater of dogs. As regards the sensibility of the dura mater, Leyden and Pagenstecher differ."—Bartholow's "*Functions of the Human Brain*," *Amer. Journ. of Med. Sci.*, April, 1874, pp. 305-306.

Lindgren, H. O. Prof. Med. Fac. Lund University.

Lingard, Alfred, 91, Harley Street, Cavendish Square, W., M.R.C.S. Eng., 1873; L.S.A., 1874 (St. Thos.'s, Vienna, Berlin, and Paris); Fell. Roy. Micros. Soc.; Mem. Path. Soc., Lond., Brit. Med. Ass., Anthropol. Inst. Great Brit. and Irel., and Soc. Anthropol. Paris; late House Phys. St. Thos.'s Hosp.; Transl. of Fournier's "Syphilis and Marriage"; Contrib. "Ueber den Bau der Symphegefässe in pathologisch veränderter Haut;" *Allge Wien. Med. Zeit.*

1876; "On an Infectious Ulcerative Disease of Skin and Mucous Membrane caused by a Specific Bacillus," *Lancet*, 1883.

Held a License for Vivisection in a building belonging to Mr. George Lacey, 213, Wandsworth Road, S.W., and situated in the Stag Yard, opposite side of the Wandsworth Road to the above address in 1883. Certificate dispensing with obligation to kill. No experiments returned 1883.

Liouville, Henri. B. Paris, 1837; D. 1882. M.D. 1870; Chief Direct. Lab. Hotel Dieu, 1872.

Author of "De la Généralisation des Anéurismes Miliaries," 1871; "De l'abus en thérapeutique," 1875; Contrib. to various Med. Journals.

Lister, Sir Joseph, Bt., 12, Park Crescent, Portland Place, W. M.B. Lond., 1852; B.A., 1847; F.R.C.S. Eng., 1852; F.R.C.S. Edin., 1855; F.F.P.S. Glasgow, 1860; F.R.S. Lond. and Edin.; LL.D. Edin., 1878; M.D. Dub., 1879; LL.D. Glasg., 1879; D.C.L. Oxon., 1880; LL.D. Cantab., 1880; Knt. Comm. 1st Class, Dannebrog; Fell. Univ. Coll. Lond.; Cothenius Medallist German Soc. of Naturalists, 1877; Roy. Medallist Roy. Soc. Lond., 1880; Laureate French Acad. Sci., 1881; Hon. Mem. numerous Foreign Societies; Mem. of Assoc. for Advancement of Medicine by Research; Surg. Extraord. to H.M. the Queen; Prof. Chir. Surgery, King's Coll.

Author of articles "Amputation" and "Anæsthetics" in Holmes's System of Surgery; "Croonian Lecturer on Coagulation of the Blood," Proc. Roy. Soc.; "On Ligatures of Arteries on the Anti-septic System;" "De l'influence qu'exerce la position du corps sur la circulation sanguine," paper read before Acad. de Med., Paris, June, 1878.

Made experiments on horses and calves.

"Considers that experiments on living animals is one of the most important means of increasing knowledge (4,291-2). Attaches very great importance to demonstration as a means of instruction (4,339-43)." Thinks that "demonstrations should be performed under anæsthetics, but that not so much for the purpose of avoiding pain to the animals as for the sake of avoiding a demoralising influence on the students" (4,328).—*Digest Ev. R. Com.* pp. 30-31.

Livon, Charles Marie, Marseilles. M.D., 1873; Prof. Exper. Physiol. Sch. Med.

Author of "Nouveau Manuel de Vivisections," Paris, 1882; "Du Traitement des Polypes Laryngiens," 1873.

Loewenfeld, L. Prof., Munich.

Author of "Experimentelle und Kritische Untersuchungen zur Electrotherapie des Gehirns," Munich, 1881.

"Dr. Loewenfeld, of Munich . . . also made an experimental inquiry into the effects of both currents, when applied to the brains of rabbits and kittens, on intercranial circulation. . . . We cannot, however, help remarking on an important discrepancy in the results of his experiments on animals, of which the author himself does not appear to be aware."—*Med. Times and Gaz.*, March 4th, 1882, p. 238.

Loewenthal, N. Asst. to Schiff Physiol. Lab. Geneva.

Author of "Ueber den Unterschied Zwischen der Secundären Degeneration des Seitenstrangs nach Hirn und Rückenmarks verletzungen.—Pfüger's *Archiv*, Vol. XXXI., p. 350.

Lombardini (Prof.), Pisa. Scuola Veterinaria.

Longet, François Achille. B. St. Germain-en-Laye, 1811; d. Bordeaux, 1871. Mem. Acad. Med. Paris, late Prof. Physiol. Med. Fac. Univ. Paris.

Author of "Mouvement Circulaire de la Matière dans les trois règnes," 1866; "Traité de Physiologie," 1850; "Recherches Experimentales sur les fonctions de l'épiglotte et sur les agents de l'occlusion de la glotte dans la déglutition, le vomissement, etc.," 1841; "Recherches Expérimentales sur les fonctions des nerfs, des muscles, du larynx," 1841; "Recherches Expérimentales sur l'irritabilité musculaire," 1841; "Anatomie et Physiologie du système nerveux de l'homme et des animaux vertébrés," 1846; "Expériences relatives aux effets de l'inhalation de l'éther sulfurique sur le système nerveux," 1847; "Du Sulfocyanure de potassium considéré comme un des éléments normaux de la salive," 1856; "Fragments sur les phénomènes chimiques de la digestion," 1857.

"His (Longet's) experiments to confirm those of Majendie, led him to conclusions completely opposed to those of Flourens."—Art. "Brain," *Encyclopédie des Sci. Méd.*, Vol. XIV., 1873, p. 204.

"Experiments on animals of a different species, so far from leading to useful results as regarded human beings, had a tendency to mislead us. In seeking to benefit mankind by vivisections, it would be necessary to have recourse to pathological facts founded on experiments on human beings."—Longet, quoted in *Fleming's Essay*, p. 42.

Lovén, Christian. M.D., Prof. Med. Chir. Inst. Stockholm.

Author of "Erweiterung von Arterien durch Nervenregung," Ludwig's *Arbeiten*, 1866, p. 1.

"I now come to the results of stimulation of the central nerves. When a powerful unnarcotised animal was submitted to the experiment, I observed that in most cases, the arteria auricularis became smaller at the commencement of the stimulation. This occurred more surely and quickly as the animal expressed its sufferings more violently by cries and struggles. This narrowing of the artery lasted for different, but always very short periods of time, and then gave place to an enlargement even during continued stimulation. . . . This is, however, not always the case when a great number of experiments are made. . . . Once it happened that in an unnarcotised animal, immediately at the commencement of the stimulation without any signs of narrowing a very powerful distention occurred. This result appeared in the same animal as long as the sensitiveness of the nerves remained sufficient to allow the experiment to be continued."—*Erweiterung von Arterien durch Nervenregung*, Ludwig's *Arbeiten*, 1866, pp. 9-10.

Luchsinger, B. Prof. Physiology Vet. School, Berne, formerly Asst. Physiol. Lab. Zurich; Prof. Exper. Pharmacol. Gen. Physiol. Med. Fac. Univ. Berne.

Author of: "Zur Kenntniss der Functionen des Rückenmarkes," Pfüger's *Archiv*, Vol. XVI.; "Neue Versuche zu einer Lehre von

der Schweiss secretion, ein Beitrag zur Physiologie der Nerven-centren," *Ibid.*, Vol. XIV., p. 369; "Zur Physiologie der Schweiss secretion," Virchow's *Arch.*, Vol. LXXVI., p. 529; "Zur Allgemeinen Physiologie der irritablen Substanzen," Bonn, 1879; "Ueber gekreuzte Reflexe," Pfüger's *Archiv*, Vol. XXII., p. 179, etc., etc.

Made experiments in the Physiological Laboratory of Zurich (jointly with Drs. von Borosnyai, Steger, and Pestalozzi) on electrical stimulation of the cerebral cortex. Also experiments on dogs, horses, cats, pigs, oxen, and goats. Cut the nervus ischiadicus to study the action of muscarin and pilocarpin on the excretory glands. Also experiments on cats and kittens with Miss J. A. Kendall.

"At the sight of a strange dog, still more so on being bound to the vivisection table, the cat often breaks out in a violent perspiration on all four feet. It strikes us naturally that the first thing to do is to remove totally all these psychical influences, if it is wished to study thoroughly other causes which may have the effect of stimulating the perspiratory centres. A method frequently employed—narcoosis—I have purposely never used; indeed, I *never* make use of it except for preliminary operations. If the brain is really narcotised, the other nerve centres must also have lost much of their excitability, lesser degrees of narcotisation seem to me to offer very little advantage for the purpose we have in view."—Pfüger's *Archiv*, Vol. XIII., p. 375.

"By the following experiments Luchsinger believes himself to have found the most irrefutable proof of the existence of a really antagonistic action of atropin and pilocarpin on the excretory glands, and to have finally disposed of my thesis on physiological antagonism. When he had fully convinced himself of the functions performed by the sweat glands on the hind feet of chloroformed cats, by cutting both hip nerves, and stimulating their peripheral ends, and also by injecting 0.01 grs. of pilocarpin under the skin of the back; when he had succeeded in completely arresting all secretion of sweat by the injection of 0.001—0.003 grs. of atropin under the skin of the back, so that the very strongest stimulation of the hip nerves remained entirely without effect, he always succeeded in causing a spontaneous secretion of sweat in the balls of the toes by the injection of 0.361 grs. of pilocarpin either into the feet or under the skin of the back. If he injected less than 0.001 grains of pilocarpin, the natural secretion of sweat might not result, but could be excited by stimulation of the nerves which had been without effect before. The feet into which no pilocarpin had been injected remained dry and could not be brought to perspire by electrical stimulation of the nerves. Luchsinger considers these experiments to be practically the most simple and theoretically the most explicit, and hence he believes that I shall also allow myself to be convinced by them of the fallacy of my third thesis. Our experiments on the same subject have shown us however on the contrary that Luchsinger's theories are only partially founded on correct observation, also that the conclusiveness of his experiments only appears to him so simple and clear because he has not thoroughly worked out the whole question, and has allowed himself to be duped too rapidly by the surprising results which happened at first."—Rossbach, "*Neue studien ueber den Physiologischen Antagonismus der Gifte*," Pfüger's *Archiv*, Vol. XXI., pp. 2-3.

Luciani, Luigi, 3, Via San Sebastiani, Florence. B. 1842 at Ascoli, Pieno. Studied Univ. Bologna and Naples. Asst. Physiol. Lab. Univ. Bologna, 1868; sent to Leipzig to study Exper. Physiol. under Ludwig, 1872; Prof. Gen. Path. Univ. Parma, 1875; Prof. Physiol. Univ. Siena, 1879.

Author of "Sulla fisiologica degli organi centrali del cuore," Bologna, 1873; "Nacoro pretodo per la trasfusione diretta del sangue," 1874; "Sulla natura frenzionale del centro respiratorio" (experimental researches made jointly with Prof. Prattili) 1874; "Sulla funzioni del cervello," ricerche sperimentali (with Prof. Tamburini), 1878-79, &c.

Experiments on starving dogs.—*Archiv per le Scienze Mediche*, Vol. V., p. 338.

Ludwig, Carl Friedrich Wilhelm. B. Witzenhausen, 1816. Studied Med. at Marburg and Erlangen; Prof. extraord. Comp. Anat. Marburg, 1846; Prof. Anat. and Physiol., Zurich, 1849; Prof. Physiol. and Physics, Josephinum at Vienna, 1855; Prof. Leipsig, 1865; Privy Court Councillor; Prof. at Physiol. Inst.; Vice-President Leipsic Thierschutzverein (Society for the Protection of Animals).

Author of "Lehrbuch der Physiologie des Menschen," Heidelberg, 1852; "Die physiologischen Leitungen des Blutdruckes," Leipsig, 1865.

Inventor of an apparatus for cutting through the spinal marrow of living mammalia, recommended by Prof. Cyon; also of an engine for measuring the rapidity of the circulation of the blood.

Lussana Filippo. B. Senate, San Leone. Studied at Clusone. Bergamo and Pavia; Prof. Physiol. Univ. Padua; Direct. Univ. Padua.

Author of "Osservazioni fisio-patologiche sul sistema nervoso," 1856; "Il Pancreas," 1852; "Atropine e Belladonna," 1852; "Patologia del Cervelletto," 1856; "Sperienze sul gran-simpatico," 1857; "Fisiologia del dolore," 1859; "Sur la fibrine du sang," 1866; "Fisiologia della donna," 1867; "Sui processi digestivi," 1868-69; "Fisiologia dei centri nervosi encefalici," 1871; "Sui canali semicircolari, Recherche fisia-patologiche," 1872; "Des centres moteurs encéphaliques," 1877; "I movimenti del dolore," 1878, &c.

Lyon (Dr.), St. Petersburg.

Macewen, William, 73, Bath Street, and 5, Ure Place, Monro Street, Glasgow. M.D. Glasgow, 1872; M.B. and C.M., 1869; F.F.P.S. Glasg., 1874; (Glasg.); Mem. Nat. Hist., Path. and Chir., and Med. and Chir. Socs., Glasg.; Lect. on Chir. Surg., and Surg. Glasg. Roy. Infirm.; Casualty Surg. Glasg. City; late Disp. Surg. Glasg. Roy. Infirm., and Western Infirm., Glasg.; House Phys. Roy. Infirm. and Asst. Phys. City Asyl., Glasg.

Author of "Wounds, in relation to the instruments which produce them;" "Antiseptic Osteotomy for Genu Vulgum," 1878; "Osteotomy, with an Inquiry into the Ætiology and Pathology of Knock Knee, Bow Legs, and other Osseous Deformities of the Lower Limbs," 1880; "Observations concerning Transplantation of Bone," 1881; "On the Immediate Treatment of Wounds," 1881; "Chromic Gut and Chicken-bone Drainage Tubes," 1881. Contrib. to "Glasg. Med. Journ.," 1874; "Edin. Month. Med. Journ.," 1875; "Brit. Med. Journ.," 1880.

Held a License for Vivisection at Glasgow Royal Infirmary Medical School 1881 and 1882. Certificates Dispensing with obligation to kill in 1881 and 1882. No experiments returned in 1882.

Mackay, J. Yule. M.B.

Held a License for Vivisection at the University of Glasgow Physiological Laboratory and Physiological Class-room, 1883.

MacLagan, Douglas, 28, Heriot Row, Edinburgh. M.D. Edin. 1833; F.R.C.P. Edin., 1864; L.R.C.S. Edin., 1831 and 1833; Vice-Pres. F.R.S. (Edin.); Prof. of Med. Jurisp., Police and Clin. Med. Univ. Edin.; Surg. Gen. Queen's Body Guard for Scotland; Surg.-Maj. Q.E.R.V.B.; Hon. Mem. Pharm. Soc. Gt. Brit., etc. etc.

Contrib. Papers on Mat. Med. and Therapeutics, Pract. of Med. and Med. Jurisp. in Edin. Med. Journs.

Held a License for Vivisection at University of Edinburgh Medical Jurisprudence Department in 1878 and 1879. Certificates for Experiments without Anæsthetics in 1878 and 1879. No experiments returned.

MacLeod, Neil, Stoney Down, Walthamstow. M.D., 1883.

Held a License for Vivisection at Licensee's House, Stoney Down, Walthamstow, 1883.

Maier, Rudolf. B. Freiburg, 1824. Prof. Path. Med. Fac. Univ. Freiburg.

Author of "Experimentelle Studien ueber Bleivergiftung," Virchow's Archiv., Vol XC. (1882), p. 435.

Fed rabbits and guinea-pigs with lead.

Majendie, Francois. B. at Bordeaux, 1783; d. at Paris 1855. M.D. Paris, 1808; Mem. Acad. Science and Med. 1821; held a Professorship of Medicine at the College of France, which he converted in 1830 into a Professorship of Experimental Physiology.

Author of "Traité élémentaire de la Physiologie," 1816.

Majendie was the founder of the School of Experimental Physiology, and was so indifferent to the sufferings of the animals experimented upon that he has been called cruel by his fellow workers, and was even accused of having performed experiments on human beings. On the occasion of his first visit to England he was openly accused in Parliament, but was so warmly defended by James Mackintosh and a strong party, that the accusation led to no result.

"I recall to mind a poor dog, the roots of whose vertebral nerves Majendie desired to lay bare. The dog, already mutilated and bleeding, twice escaped from under the implacable knife, and threw his front paws around Majendie's neck, licking him, as if to soften his murderer and beg for mercy. Vivisectors may laugh, but I confess I was unable to endure the heartrending spectacle."

—Dr. Latour, *Lancet*, No. 2,086, pp. 224-5.

Malassez, 168, Boulevard Saint Germain, Paris, M.D., 1873. Asst. Direc. Lab. Histol., College of France; formerly Res. Hosp. Phys.

Author of "De la Numération des globules rouges du sang, &c." Paris, 1873. "Sur les perfectionnements les plus récents apportés aux méthodes et aux appareils de numération des globules sanguins, et sur un nouveau compte-gouttes," *Arch. de Physiol. norm. et path.* 1880, p. 377; "Sur la digestion pancréatique," *Gaz. Méd. de Paris* No. 51, p. 1880, &c.

Extirpated the spleen of dogs; the result of these experiments being that the dogs became mangy, and had to be killed.—*Gaz. Méd. Paris*, 1878, p. 317.

Mantegazza, Paolo. B. at Monza, 1831. Stud. Med. Pisa, Milan, and Pavia; Prof. Chem. Tech. Sch., Milan; Prof. Path. Univ. Pavia; Prof. Anthropol. Inst. di Studii Superiori, Florence; Senator; Practised Med. in South America. On returning to Italy founded Lab. of Exper. Path. at Pavia, the first in Europe; founder Mus. Anthropol., Florence.

Author of "Sulla America Meridionale, lettere mediche," Milan, 1859; "Rio de la Plata e Teneriffe," *Ibid.*, 1867; "Del Azionne del dolore sulla respirazione," 1867; "Un giorno a Madere," 1868; "Profili e paesaggi della Sardagna," Milan, 1869; "Dizionario delle Scienze medicale" (jointly with A. Corradi and G. Bizzozzero). *Ibid.*, 1869, etc.; "Enciclopedia Igienica popolare," *Ibid.*, 1870; "Fisiologia dell' Amore," *Ibid.*, 1873; "Fisiologia del piacere," *Ibid.*, 1874; "Il bene ed il male," *Ibid.*, 1874; "Il Dio Ignoto," Florence, 1877; "Fisiologia del dolore," 1880.

Inventor of a machine called "The Tormentatore," capable of inflicting "intense," "cruel," "most atrocious" agony.

"The *Gazetta Italiana di Milano* contains an essay of Prof. Mantegazza on experiments carried on under his direction at the laboratory of experimental pathology of the University of Pavia. It will suffice to state that the experiments were intended to study the action of pain on digestion and nutrition. They were, as the Professor himself confesses, agonising to the animals subjected to them, and distressing to the experimenters, and simply proved that loss of appetite, great weakness, and a peculiar imbibition of moisture were the result of the pain inflicted. It is added that no alteration of the spinal marrow could be detected after the agony had been protracted for one month. Very meagre results of unpardonable cruelty."—*Lancet*, March 25th, 1871, p. 415.

Mapother, Edward Dillon, 6, Merrion Square North, Dublin. M.D. Qu. Univ. Irel. (with 1st Honour and Gold Medal), 1857; F.R.C.S.I. 1862; L. 1854 (Richm. Hosp., Qu. Univ. and R.C.S. Irel.); Pres. Stat. Soc. Dub.; Prof. Physiol. and Ex-Pres. R.C.S.I.; late Exam. Surg. Qu. Univ. Irel.

Author of "A Manual of Physiology and of the Principles of Disease," 3rd edit. 1832; "The Medical Profession and its Educational and Licensing Bodies" (1st Carmichael Prize), 1868; "Lectures on Public Health," 2nd edit., 1867; "The Body and its Health, a Book for Primary Schools," 4th edit.; "Lectures on Skin Diseases," "Hip Joint," 1853 (obtained Gold Medal of Path. Soc.) Contrib. to *Dublin Med. Journ.* and *Brit. Med. Press*, etc.

Held a License for Vivisection at Royal College Surgeons Dublin Physiological Laboratory and Lecture Room in 1878. No Experiments returned.

Marey, Etienne Jules, 11, Boulevard Delessert, Paris. B. at Beaune (Côte d'Or), 1830; stud. Med. at Paris; M.D. 1859; Prof. Nat. History College of France, 1869; Mem. of the Acad. of Med., 1872; and Mem. Acad. of Sci. 1878, in the place of Claude Bernard.

"To meet the views of M. Marey a physiological station is being established in the Bois de Boulogne. In his Laboratory at the College of France M. Marey has been able to make a number of researches on the physiology of the nerves and muscles; but from want of space, he has encountered difficulties when he required to study the functional movements of the various animals. The new physiological station of the Bois de Boulogne, which will have a roadway of 3,500 yards in length, will enable M. Marey to make interesting experiments on this subject."—*Brit. Med. Journ.*, 19 Nov., 1881, p. 826.

Dr. Marey devoted himself to scientific Research, and founded a Free Lab. of Physiology, which was for some time the only one in France.

Author of "*Recherches sur la circulation du sang à l'état physiologique et dans les maladies*," Paris, 1859; "*Physiologie Médicale de la circulation du sang*," 1863; "*Etudes physiologiques sur les caractères graphiques des battements du cœur*," 1863; "*Du mouvement dans les fonctions de la vie*," Paris, 1868; "*Physiologie médicale de la circulation du sang basée sur l'étude graphique des mouvements du cœur*," Paris, 1868; "*Expériences sur la résistance de l'air pour servir à la physiologie du vol des oiseaux*," Paris, 1869; "*Mémoire sur le vol des insectes et des oiseaux*," 1869; "*Mémoire sur le Torpille*," 1873; "*La machine animale*," 1873; "*Physiologie expérimentale*," 1875 (being an account of the works carried on in his laboratory); "*La méthode graphique dans les Sciences expérimentales*," 1878.

"If it is necessary to register the movements of the heart a small instrument invented by M. Marey is very useful. The animal is fastened on its back to a wooden table, and its heart being laid bare, can be held level with the abdominal region by a pair of bent tongs."—*Traité de Physiologie*, Bécclard, Vol. II., p. 37.

Martin, H. Newell. M.A.; D. Sc.; Prof. Biol., John Hopkins' University, Baltimore, U.S.

Author of "*The normal respiratory movements of the frog, and the influence upon its respiratory centre of stimulation of the optic lobes*," *Journ. of Physiol.*, 1878, p. 131; "*On the respiratory function of the internal intercostal muscles*," jointly with E. Murray Hartwell, M.A., *Ibid.*, Vol. II., No. 1, p. 24.

"After dividing the skin in the middle line, I have always removed a piece of the skull with a small trephine applied in a lozenge-shaped area which is seen to be bounded on the sides by four small vessels. The posterior edge of the opening thus made extends back to about opposite the posterior margin of the cerebral hemispheres, and the aperture was enlarged with scissors until the front edges of the optic lobes came into view. These were carefully and completely separated by a cataract knife from the parts of the brain in front of them, and the latter were removed from the cranial cavity; the incision in the skull being usually carried forwards to facilitate this removal. The edges of the skin were then brought carefully in contact, without sutures, and the animal

placed in a dish containing a little water and left until the wound healed up . . . they were not fed, as experience showed me that for the week or two during which I desired to keep them, they did better without food; or at least without the exhausting struggle which the attempt to open their mouths called forth."—*Journ. Physiol.*, Vol. I., p. 155.

"Dogs and cats were employed in our experiments."—*Journ. Physiol.*, Vol. II., p. 25.

Martin, Hippolyte, 62, Rue de la Chaussée-d'Antin, Paris. Phys. Hos. Dis. Children.

"M. Hippolyte Martin has presented to the Biological Society of Paris, specimens of artificially excited tuberculosis in rabbits, resulting from the injection of apparently inert powders (lycopodium, etc.), into the peritoneal cavity."—*Brit. Med. Journ.*, April, 2, 1881.

Martini, Adolfo. M.D. Asst. Prof. Pisa Univ.

Matthias-Duval, 11, Rue des Martyrs, Paris. Agrégé de la Faculté.

Mayer, Sigmund. Prof. Histol. Med. Fac. Univ. Prague.

Author of "Speziellen Nerven Physiologie" in "Hermann's Handbuch der Physiologie," Leipzig, 1879; "Studien zur Physiologie des Herzens und der Blutgefäße;" "Ueber die Erscheinungen im Kreislaufsapparate nach zeitweiliger Verschlussung der Aorta," Sitzber. d. k. Akad. d. Wiss. (Wien), Vol. 79, part III., 1879; "Fortgesetzte Untersuchungen ueber die Hemmung und Wiederherstellung des Blutstroms im Kopfe," (11) Centralb. f. d. med. Wiss. No. 8 (1880), p. 129; "Zur Lehre von der Herzthätigkeit," Prag. Med. Wockenschr., No. 14 (1880), p. 135; "Ueber ein Gesetz der Erregung terminaler Nerven-Substanzen," Sitzber. d. k. Akad. d. Wiss. (Wien), Vol. 81 (1880), p. III.

McBride, Peter, 16, Chester Street, Edinburgh. M.D. Edin, 1881; M.B. and C.M., 1876; F.R.C.P. Edin., 1880; M. 1879; L. 1876 (Edin. and Vienna); Mem. Edin. Med. and Chir. Soc.; Lect. on Dis. of Ear Edin. Sch. of Med., etc.

Contrib. to "Journ. Anat. and Physiol.," "Lancet," "Med. Times and Gazette," etc., etc.

Held a License for Vivisection at University, Edinburgh Materia Medica Department, in 1879 and 1880; Certificates for Experiments without Anæsthetics in 1879 and 1880.

McDonnell, Robert, 89, Merrion Square, W. Dublin. A.B. and M.D. Dub., 1857; F.R.C.S.I. (Exam.), 1853; L.M. Rot. Hosp. Dub.; (Carm. Sch. and T.C. Dub.); F.R.S., M.R.I.A., Mem. Counc. Univ. Dub.; Mem. Path. Soc. Dub., Roy. Zool. Soc. and Stat. Soc. Irel.; Fell. Roy. Med. Chir. Soc. Lond.; Surg. Dr. Steeven's and Jervis St. Hosps.; late Med. Supt. Mountjoy Govt. Prison; Asst. Surg. Brit. Civ. Hosp. Smyrna and Civ. Surg. Med. Staff, Crimea; Ex-Pres. R.C.S., Irel.

Author of "Lectures and Essays on the Science and Practice of Surgery;" "Lectures on Physiology of the Nervous System," Dub. Hosp. Gaz.; "Observations on the Habits and Anatomy of the

Lepidosiren Annectens," Journ. Roy. Dub. Soc.; "On the Functions of the Liver," 1865. Contrib. "Physiology of Diabetic Sugar in the Animal Economy," Dub. Quart. Journ.; "Observs. on the Operation of Trephining the Spine in Cases of Fracture," *Ibid.* 1865; also to Dub. Hosp. Gaz., Dr. Brown-Séquard's Journal of Physiology, Trans. Roy. Irish Acad., Proc. Roy. Soc., etc.; Editor of "Colles's Works" (Syd. Soc.)

Held a License for Vivisection at the Royal College of Surgeons, Dublin, Physiological Laboratory and Lecture Rooms, at Laboratory Medical College, Dr. Steven's Hospital, and 212, Great Brunswick Street, Dublin, in 1878-79-80-81-82-83. No Experiments returned.

Those who desire to advance science should begin as soon as they have passed their final examination to experiment independently in the laboratory; did so himself, and has also made a very few experiments at his own house, 4,514-7.—*Digest Ev. R. Com.*, p. 33.

McKendrick, John Gray, University, Glasgow. M.D. Aberd. and C.M., 1864; F.R.C.P. Edin., 1872; LL.D., 1882; (Univ. Aberd. and Edin.); F.R.S. Edin.; Prof. of Insts. of Med. Univ., Glasg.; Fuller Prof. of Physiol. Roy. Inst. Gt. Brit.; formerly Thomson Lect. on Nat. Sci. Free Church Coll., Aberd., 1879-80; Lect. on Insts. of Med. Extra. Acad. Sch., Edin.; Lect. on Physiol. Dick Vet. Coll., etc., etc.

Author of "Outlines of Physiology," 1878; various Papers on Physiological Subjects in Trans. and Proc. Roy. Soc.

Held a License for Vivisection at University, Glasgow, Physiological Laboratory and Physiological Class Room; also unrestricted as to place in 1878-79-80. Certificates for Illustrations of Lectures in 1878-79-80.

Experiments on the eyes of living birds and mammals.

Does not see how legislation can regulate vivisection (3953-4); and fears it would retard the advancement of science (4012); has a private laboratory himself (3960-5); and disapproves of licensing places as likely to inconvenience competent and earnest men . . . —*Digest Ev. R. Com.*, p. 30.

"On an etherized animal, the degree of reflex stimulation produced by an electric current of predetermined intensity in immediate contact with the skin was noted. Afterwards the exposed cerebral hemispheres were simultaneously stimulated, to observe whether the reflex action produced by the first stimulation increased or diminished. This method only led to uncertain results."—Review of "On the inhibitory or restraining action which the encephalon exerts on the reflex centres of the spinal cord" by John McKendrick (*Edin. Med. Journ.*, Feb., 1874, p. 733), *Revue des Sciences Médicales*, Vol. IV., No. 7, p. 64.

"At this stage of the inquiry we examined the action of light on the eyes of living animals. . . . We accordingly instituted a series of experiments which were practically very troublesome. We examined the eyes—(1) of the living cat; (2) of the living pigeon; and (3) of the living owl. In all cases the animals were deeply under the influence of chloroform during the experiments.

"1. The Cat.—The animal was securely fixed in Czermak's rabbit-holder. The skin around the orbit was reflected. The zygomatic

arch was snipped through by bone forceps, so as to expose as much as possible of the side of the orbit. The cellular tissue of the orbit was then pushed aside along the superior and the lateral aspect of the eyeball, so as to reach the optic nerve with as little disturbance as possible to the vascular arrangements of the eyeball. On exposing clearly the optic nerve, and staunching hæmorrhage, the nerve was cut through transversely with sharp scissors. When this was done the globe could be pulled downwards, inwards, and forwards, so as to expose a clear transverse section of the nerve. With the head firmly fixed, one narrow clay point was now placed on the cornea, while the other was in contact with the transverse section of the nerve.—“On the physiological actions of light,” by Dr. McKendrick and Mr. James Dewar.—*Trans. Roy. Soc. Edin.*, 1876, p. 160.

McReddie, George. M.D. India.

“Dr. McReddie (Proceedings of the N.W. Provinces Branch of the British Medical Ass., 1883), after injecting strychnine into dogs, has tried the effects of antidotes on the animals, using inhalations of chloroform, amyl nitrite, atropine, and eserine. He finds that all these remedies are inefficacious, neither preventing the fatal result nor arresting the convulsions.”—*Brit. Med. Journ.*, May 19th, 1883, p. 973.

McWilliam, John Alexander, Univ. Coll., Gower Street, W. M.D. Aberd. (highest Honours for Thesis), 1882; M.B. and C.M. (highest Acad. Honours and John Murray Medal and Schol.), 1880; Univs. Aberd. and Edin., Univ. Coll. Lond., and Univ. Leipsig; Demonstr. of Physiol. Univ. Coll. Lond.; late Teacher of Exper. Physics. and Asst. Demonstr. of Anat., Char. Cross Hosp. Med. Schl., and Asst. in Physiol. Univ. Aberd.

Contrib. “Case of Renal Abnormality,” “*Brit. Med. Journ.*,” 1882.

Held a License for Vivisection at University College New Physiological Theatre and Rooms comprised in Physiological Laboratory, together with Curator's Rooms, 1883; also Certificate for Experiments in Illustration to Lectures. No experiments returned.

Meissner, G. Prof. Exper. Physiol. Med. Fac., Göttingen Univ.; Lec. Physiol. Instit.

Meren, Giovanni. M.D., Asst. Prof. Cagliari University.

Metzdorf, R. Prof. Lab. Vet. School, Breslau.

Miescher, F. Prof. of Physiol. Med. Fac., Bâle Univ.

Milne-Murray, Robt., 10, Hope Street, Edinburgh. M.A. St. And., 1875; M.B. Edin. and C.M. (Honours) 1879; M.R.C.P. Edin., 1881 (Univ. Edin.); Mem. Edin. Obst. Soc., late Res. Phys. Roy. Matern. Hosp. Edin.

Author of “Chemical Notes and Equations;” Contrib. to *Edin. Med. Journ.*, 1881 and 1882.

Held a License for Vivisection, no place named, in 1882 and 1883; also Special Certificate for Experiments without Anæsthetics same years.

Moleschott, Giacomo. Rome Univ. Prof. B. 1822 at Herzogenbusch. M.D. Heidelberg (Univ. Heidelberg and Haarlem); Practised Med. Utrecht; Private Prof. of Physiol. Chem. and Anthropol. Heidelberg, 1847; later Prof. Physiol. Zurich; Univ. Turin 1861; naturalised Italian and Senator, 1876; Prof. Physiology Univ. Rome 1878.

Author of "Physiology of Food," 1859; "Physiology of Transformation of Substances in Plants and Animals," 1851; "Physiological Sketches," 1861; and joint author (with Donders and Van Deen) of "Holländische Beiträge zu den anatomischen und physiologischen Wissenschaften."

Founded a Physiol. Lab. at Heidelberg in 1853.

"M. Moleschott's experiments consisted in taking the liver out of animals capable of resisting this mutilation (frogs, for instance, may survive from eight to fifteen days). More than one hundred frogs have been thus prepared by M. Moleschott."—Note, Bécclard's *Traité de Physiologie*, p. 716, Vol. I., 1880.

Mollière, Daniel. Paris.

Contrib. to "Progrès Médical," 1873, p. 163.

Cut the spinal nerves of rabbits and kittens to produce artificial deformity of the spine.

Morgan, C. Lloyd, Prof. Geol. and Biol. Univ. Coll., Bristol; formerly of Rondibosch, South Africa.

"I will now briefly describe the nature of my experiments:—

"1. Condensing a sunbeam on various parts of the scorpion's body. . . .

"2. Heating in a glass bottle, as this admits of most careful watching. I have killed some twenty or thirty individuals in this way. . . .

"3. Surrounding with fire or red-hot embers. . . .

"4. Placing in burning alcohol. . . .

"5. Placing in concentrated sulphuric acid. . . . The creature died in about ten minutes. . . .

"6. Burning phosphorus on the creature's body. I placed a small pellet of phosphorus near the root of the scorpion's tail, and lit the phosphorus with the touch of a heated wire. . . .

"7. Drowning in water, alcohol, and ether.

"8. Placing in a bottle with a piece of cotton-wool moistened with benzine.

"9. Exposing to sudden light. . . .

"10. Treating with a series of electric shocks.

"11. General and exasperating courses of worry."

"I think it will be admitted that some of these experiments were sufficiently barbarous (the sixth is positively sickening) to induce any scorpion who had the slightest suicidal tendency to find relief in self-destruction. I have in all cases repeated the experiments on several individuals."—C. Morgan Lloyd, in *Nature*, Feb. 1st, 1883.

Mo'riggia (Prof.), Rome University.

Mosso, Angelo. Prof. Physiol. Univ. Turin. B. at Turin, 1846. For two years Mosso assiduously attended Schiff's Laboratory, afterwards he studied two years at Leipzig under Ludwig. Then he studied at Paris. From thence he returned to accept the chair of *Materia Medica* at Turin, and soon

after with a subsidy from the Government and his University, he founded the first Laboratory of experimental Chemistry in Italy. When the Professorship of Physiology became vacant by the translation of Moleschott to Rome, Mosso accepted it.

Author of "Movimenti dell'esofago," *Experimental Researches* (Turin, 1872); "Sopra alcune nuove proprietà della pareti dei vasi sanguigni," 1873; "Sull' azione dell'emetico," 1874; "Sui movimenti dell' iridi," 1874; "Critica sperimentale della diastole attiva del cuore," 1874; "Sopra un nuovo metodo per iscrivere i movimenti dei vasi sanguigni nell' uomo," 1875; "Sull' azione fisiologica dell' aria compressa," 1875; "Sopra Palternarsi del campo della visione," 1875; "Sull' azione del cloralo," 1875; "Tre memorie intorno alla circolazione del sangue nel cervello dell' uomo," etc.

Made experiments with nitrite of amyl in the Lab. of experimental Pharmacology of the Univ. of Turin (*Gaz. Méd. de Paris*, 1878, p. 174); also jointly with Guarechi injected extract of putrified human brain into animals.

Mott, Frederick Walker, 65, Grove Street, Liverpool. M.B., London (Univ. Schol. and Gold Medallist in For. Med., 1st Honours in Med.) and B.S., 1881; M.R.C.S. Eng., 1880 (Univ. Coll. and Vienna); *Demonst. of Physiol.* Univ. Coll., Liverpool; late House Phys. and Opt. Asst. Univ. Coll. Hosp., Lond.

Contrib. "Bacteria, or their Antecedents in Healthy Tissues," *Journ. of Physiol.*

Held a License for Vivisection at the Physiological Laboratory, Liverpool School of Medicine in 1883; also Certificate dispensing with obligation to kill.

Munk, Immanuel. B. 1839. Assist. *Demonst. Chem. Micros. Physiol. and Histol. Med. Fac. Univ.*; Assist. *Vet. School*, Berlin.

Author of "Ueber die Resorption der Fettsäuren, ihre Schicksale und ihre Verwerthung im Organismus," *Verhandl. d. physiol. Gesell. zu Berlin*, Vol. XIII., 18 Ap., 1879; "Die physiologische Bedeutung und das Verhalten des Glycerins im Organismus," *Virchow's Archiv.*, Vol. LXXVI. (1879), p. 119; "Ueber den Einfluss sensibler Reizung a. d. Gallenausscheidung," *Pfäfer's Archiv.*, Vol. VIII.; "Physiologie des Menschen und der Säugethiere," Berlin, 1881.

Experiments on rabbits. Biliary fistula established. The animals then submitted to electric stimulations.

Munk, Hermann. Prof. exper. *Physiol. Med. Fac. Univ.* Berlin.

Author of "Untersuchungen ueber das Wesen der Nerven-erregung," Leipzig, 1868; "Ueber die Sehsphäre und die Riechsphäre der Grosshirnrinde," *Arch. f. Anat. u. Physiol.*, 1880, p. 449; "Ueber die Functionen der Grosshirnrinde," Berlin, 1880.

Made experiments on dogs and monkeys. After the destruction of their frontal lobes, dogs showed no signs of impaired intellect, but disturbances were produced in their hind quarters. They turned round in the direction of the lesion, and a cat-like bending of the spine took place. Sometimes during the first weeks the dogs held their heads down, could scarcely seize their meat; monkeys lost their power of springing, but their intelligence remained unimpaired. Also experimented with electricity on the exposed muscles.—*Berl. Akad. Sitzungsber.*, 1882, p. 36.

Murrell, William, 38, Weymouth Street, Portland Place, W. M.D., Brussels, 1879; M.R.C.P. Lond., 1877; L. 1875; M.R.C.S. Eng., 1875; L.S.A. 1874 (Univ. Coll.); Fell. Roy. Med. Chir. Soc. Lond.; Lect. on Mat. Med. and Therap. (late Lect. on Pract. Physiol. and Med. Regist.), Westm. Hosp.; formerly Sharpey Physiol. Schol. and Demonst. of Physiol. Univ. Coll.; Obst. Asst. Univ. Coll. Hosp. and Res. Clin. Asst. Consump. Hosp. Brompton.

Author of "Nitro Glycerine as a remedy for Angina Pectoris," 1880; "What to do in cases of Poisoning," 1882 (jointly with Dr. Ringer); "Action of Atropia on the Nervous System"; "Journ. Anat. Physiol.," 1877; "Physiological Action of Aconitia," *Ibid*, 1877, etc. Contrib. to "Lancet," "Practitioner," etc.

Has made numerous experiments jointly with Dr. Sydney Ringer to test the actions of various drugs on cats and frogs.

"In addition to these experiments, we have made some observations clinically. To eighteen adults—fourteen men and four women—we ordered ten grains of the pure nitrite of sodium in an ounce of water, and of these seventeen declared that they were unable to take it. . . . One man, a burly, strong fellow, suffering from a little rheumatism only, said that after taking the first dose he 'felt giddy,' as if he would 'go off insensible.' His lips, face, and hands turned blue, and he had to lie down for an hour and a half before he dared move. His heart fluttered, and he suffered from throbbing pains in the head. *He was urged to take another dose, but declined on the ground that he had a wife and family.* Another patient had to sit down for an hour after the dose, and said that it 'took all his strength away.' He, too, seemed to think that the medicine did not agree with him. . . . The women appear to have suffered more than the men. . . . One woman said that ten minutes after taking the first dose—she did not try a second—she felt a trembling sensation all over her, and suddenly fell on the floor. Whilst lying there, she perspired profusely, her face and head seemed swollen and throbbed violently, until she thought they would burst. . . . Another woman said she thought she would have died after taking a dose; it threw her into a violent perspiration, and in less than five minutes her lips turned quite black and throbbed for hours; it upset her so much that she was afraid she would never get over it. The only one of the fourteen patients *who made no complaint* after taking ten grains was powerfully affected by fifteen. . . . The effect on these patients was so unpleasant that it was deemed inadvisable to increase the dose."—Drs. Ringer and Murrell in *Lancet*, Nov. 3, 1883.

Held a License for Vivisection at University College, London, Physiological Theatre in 1878.

Nasse, Hermann. Prof. Med. Fac., Univ. Marburg.

Author of "Ueber die Ausfluss geschwindigkeit des Blutes aus den Halsgefässen der Hunde und über die modification derselben durch Infusion von Kochsalz in die Gefässe," *Pflüger's Archiv*, Vol. XXII., p. 513.

"Exper. No. 121, was made on a dog of about 14 kgr. weight, very thin, whose blood was particularly poor. Blood was drawn from the carotid artery, the jugular vein, and the vena cava superior at the same time, the last drops of which already thickened in the glass cannula. Respiration had ceased. Only once after a long rest, did the dog draw a deep breath with open mouth as usually

happens immediately before death. The pulsations of the heart were scarcely perceptible. I then tried electric stimulation of the nervus vagus, after dissecting it out, but without causing any pulsation of the heart or breathing, either during the stimulation or when it ceased. Death was undoubtedly near. I then injected into the jugular vein a solution of common salt. Tetanus followed each injection—immediately afterwards the heart began to beat again and the blood streamed out of the arteries. When the bleeding ceased, I again injected the solution rather weaker than at first. No cramps followed but the flow of blood continued. The third injection produced the same result, but death followed soon after. The whole experiment had lasted an hour and a-half.”—*“Ueber die Ausflussgeschwindigkeit d. Blutes,”* etc., Pflüger's Archiv., Vol. XXII., pp. 547-8.

Naunyn, Bernhardt. B. in Berlin, 1839. Studied at Bonn and Berlin. Asst. Med. Clin., Berlin, under Prof. Frerichs, 1863; Prof. Med. Clinic. Dorpat, 1869; Prof. Berne, 1871; Prof. Med. Fac. Univ., Königsberg, 1872.

Co-editor with Klebs and Schmiedeberg of “Archiv für experimentelle Pathologie.” Author of “Handbuch der Intoxicationen” and “Handbuch der speciellen Pathologie,” jointly with R. Boehm, 1874; jointly (with Schreiber) of “Experiments on compression of the brain,” Arch. f. exper. Pathol. u. Pharmak., Vol. XIV., No. 2, p. 1. Contrib. various articles to “Du Bois Reymond's Archiv.”; also to Ziemssen's “Cyclopædia of Medicine.”

“The authors [B. Naunyn and Schreiber] have experimented upon dogs. A trephine is applied to the parietal bone. A tube is inserted into the opening thus made. Besides this another tube is brought into communication with the cerebro-spinal cavity on a level with the swelling formed by the meninges round the cauda equina. For this purpose it is sufficient to take out a few of the spinal apophyses of the corresponding vertebrae. One obtains thus, as it were, two receptacles communicating by the intermediary of the cephalo-spinal liquid, and it becomes easy to augment the pressure of this liquid. . . . Pain is one of the very first results produced, and it is the more intense, if the pressure be immediately brought to its greatest height. Soon, convulsions follow. These seldom are epileptiform. . . . Breathing becomes slower, then irregular, then disappears.”—*Archives Générales de Médecine*, VII^{em}. Série, Vol. I., 1882, p. 743.

Nepveu, G. Surgeon, Paris; form. Res. Hosp. Sur., La Pitié Mem. Chir. Soc. Paris.

Newman, David, 18, Woodside Place, Glasgow, N.B. M.D. Glasg. (with high commendations), 1883; M.B. Glasg. and C.M. 1878; F.F.P.S. Glasg. 1881 (Univ. Glasg. and Leipsig); Mem. Philos. Path. and Clin. and Med. and Chir. Soc. Glasg.; Exam. in Physiol. and Path. Univ. Glasg.; Extra. Disp. Surg. Western Infirmary.

Contrib. “Some Physical Experiments relating to the functions of the Kidneys,” “Journ. Anat. and Physiol.,” etc., etc.

Held a License for Vivisection at University Glasgow Physiological Laboratory in 1879-81-82-83. Certificates dispensing with obligation to kill in 1881-82-83. No Experiments returned at

the above place. Mr. Newman might also perform experiments at Glasgow Royal Infirmary Medical School, and under his Certificates was not limited to a registered place.

Nicolaides, B. M.D.; Prof. of Physiol., Athens Univ.

Contrib. to Du Bois Reymond's Archiv, for 1882.

Made experiments in the Physiol. Lab., Athens.

Nothnagel, Herrmann. B. 1841 in Alt, Lietzgöricke, Brandenburg. Studied at Berlin; Asst. of Leyden at Königsberg, and Instruct. at Univ., 1863; Prof. Univ. Berlin, 1868; Prof. Breslau, 1870; Prof. Freiburg, in Baden, 1872; Prof. Clin. Med. and Path. Med. Fac. Univ. Jena, 1874.

Author of "Ueber den epileptischen Anfall," 1870; "Ueber Neuritis in diagnostischer und pathologischer Beziehung," 1870; "Die symptomologie der Darmgeschwüre," 1881. Contrib. to "Handbuch der Krankheiten des Nerven systems," 1874; and to "Ziemssen's Cyclopædia of Medicine.

"Nothnagel considers himself justified in concluding from his experiments on rabbits that all the will fibres, without exception, traverse the lenticular nucleus. This is denied by the French investigators, who attribute the complete annihilation of voluntary movement, which Nothnagel achieved by the injection of caustic solutions into both lenticular nuclei, to a simultaneous destruction of the internal capsule which, owing to the small size of the lenticular nuclei in the rabbit, might easily have been overlooked on dissection. Nothnagel, however, has lately published a brief statement, in which he adheres to his original assertion."—Kusssmaul, "On Disturbances of Speech." *Ziemssen's Cyclop. of the Pract. of Med.*, Vol. XIV., London, 1878, p. 680.

"Unfortunately, the results of experiments upon animals, as respects the exact localisation of lesions, cannot be transferred directly to the case of man, except that we have reason to believe, through an important experiment of Hitzig's upon an ape, that the motor centres for the nerves of the extremities and the cranial nerves lie in the gyrus præcentralis, or centralis anterior (Huschke, Ecker). in other words, that affections of the cortical substance of this convolution may produce motor paralysis."—Nothnagel, "Anemia of the Brain," *Ziemssen's Cyclop. of the Pract. of Med.*, Vol. XII., London, 1877, p. 152.

Oehl, Eusebio. B. 1827, at Lodi. Laureate in Med., Pavia, 1850; studied Vienna, Paris, and Berlin; Prof. extraord. of Histol., Pavia, 1860; Prof. of Exper. Physiol., 1864.

Author of "Indagini di anatomia microscopica per servire allo studio della cute e dell' epidermide palmare della mano," Milan, 1856; "Sui cristalli di emoglobina," Florence, 1862; "Contribuzione allo Fisiologia del pneumogastrico," Naples, 1863; "Della influenza che il 5° pajo cerebrale dispiega sulla pupilla," Florence, 1863; "Sull' ormento di temperatura dei nervi eccitati," Milan, 1865; "Manuale di Fisiologia per Medici e studenti," Milan, 1868-77, &c.

Ogston, Alexander, 252, Union Street, Aberdeen. M.D. Aberd. 1866; M.B. and C.M. 1865; Surg. Aberdeen Roy. Infirmary; Regius Prof. of Surg. Univ. Aberdeen.

Author of "On the functions of the semi-circular canals, &c.," 1869.

Held a License for Vivisection at 252, Union Street, Aberdeen, 1880-81-82. Certificates Dispensing with obligation to kill in 1880-81-82. No Experiments returned in 1882. At the expiration of Dr. Ogston's License the above address ceased to be registered for the performance of Experiments.

"To ascertain the influence of pus alone, injections were first of all made with that from cold abscesses, which contained no organisms. Introduced under spray into a pure subcutaneous syringe, quantities varying from one to ten minims were injected into the subcutaneous tissue of the back in chloroformed guinea-pigs, white mice, and wild mice. In all twenty such injections were made, with the invariable result that no illness or abscess ensued. But a very different effect was produced when similar injections were made with pus containing micrococci. In every instance, with the qualifications to be presently made, well-marked disease was set up. Quantities varying from one to three minims produced in the animals already mentioned symptoms of blood-poisoning, lasting from two to five days. The animals refused food, sat cowering in a retired place in their cage, were listless and apathetic, their coat was disordered and sometimes wet, their eyes were kept closed save when startled; and the mice showed the purulent conjunctivitis and glueing together of the eyelids described by Koch in his experiments on septicæmia."—*Report on "Micro-Organisms in Surgical Diseases," Brit. Med. Journ., March 12, 1881, p. 371.*

Ollier, Louis Xavier Edouard Léopold, Lyons. B. 1825. M.D. Paris, 1856; Chief Surgeon Hotel Dieu, and Prof. Clin. Chir. Med. Faculty Lyons, 1850; Corr. Mem. Acad. Med., 1874; Corr. Mem. Institute of France.

Author of "Des moyens chirurgicaux de favoriser la reproduction des os," 1859; "Recherches expérimentales sur la production artificielle des os," 1859; "Des résections des grandes articulations," 1870; "De l'occlusion inamovible comme méthode générale de pansement des plaies," 1874; "De l'éléphantiasis du nez et de son traitement," 1876; "Traité expérimental et clinique de la régénération des os et de la production artificielle du tissu osseux," 1867; *Recherches expérimentales sur la greffe osseuse* in *Journal de Physiologie de Brown-Séguard*, Vol. III., 1867.

Oreste, Cavaliere Pietro, Naples. Scuola Veterinaria.

Orfila, Matthieu Joseph Bonaventure. B. at Mahon (Minorca), 1787. D. at Paris, 1853.

Studied the effects of narcotine on animals.

"Orfila poisoned 6,000 dogs."—Blatin, *Nos. Cruautés*, p. 206.

Osawa, K., Tokio, Japan.

Author of "Untersuchungen über die Leitungsbahnen in Rückenmarkes des Hundes." Jointly (with E. Tiegel) of "Beobachtungen über die Functionen des Rückenmarks d. Schlangen."—*Pflüger's Archiv.*, Vol. XVI., p. 90.

Made experiments in physiological laboratory at Strasburg; also in the physiological laboratory of Tokio, on the spinal marrow of serpents; spinal marrow cut through, and burning coals afterwards applied to the skin of the animals.

Ott, Isaac. Fell. in Biol., Johns Hopkins Univ., Baltimore, U.S.A. Late Lect. on Exper. Physiol., Univ. Pennsylvania.

Author of "Observations on the physiology of the spinal cord," *Journ. of Physiol.*, Vol. II., p. 42; "On crossed hyperæsthesia," *Ibid.*, Vol. III., 160; "Notes on Inhibition," *Ibid.*, p. 163.

"Method.—The animals employed were young cats with unpigmented feet: These not only bear the operations better than older animals, but sweat more easily, and the secretion is more readily observed. In cases where the cord was to be exposed, the animal was placed belly downwards, with a block of wood under its abdominal surface to elevate the vertebræ, and make them more accessible. The muscles having been separated from the vertebral arches, and held at a distance by means of weighted hooks, the spinous processes were cut off, and a small trephine employed to make openings, about half an inch apart through the arches. The intervals between these openings were subsequently broken through by means of strong cutting forceps. . . . To stimulate the nerves, or the central nervous systems, a Du Bois coil was used, with Helmholtz's arrangement to prevent unipolar action. Tetanizing currents were employed."—*Journ. of Physiol.*, Vol. II., p. 42.

Paladino, Giovanni. B. 1842, at Potenza. Studied at Naples and in all the principal physiological laboratories of Europe, under Ludwig, Du Bois Reymond, and Leukart. Prof. Physiol. Univ. Naples, 1867; Prof. Anat. and Exper. Physiol. Vet. School, same place.

Author of "Istituzioni di Fisiologia," Naples, 1878; "Lezioni d'Istologia e Fisiologia Generale," 1871; joint author (with Lanzilotti Buonsanti) of "Sulla minuta struttura e sulla fisiologia dei peli tattili," in "Bulletino dell' Associazione dei Medici e Naturalisti di Napoli," 1871, No. 7.

"Paladino and Lanzilotti Buonsanti have studied the tactile hairs of the various domestic animals, and of the mouse. . . . Section of the nervous facialis (in the horse) and stimulation of its peripheral end produces action of the tactile hairs. Simultaneous section of the trigeminus reduces considerably the energy of the action caused by stimulation of the facialis."—*Centralbl. f. d. Med. Wissensch.*, 1874, p. 116.

Panum, P. L. B. 1820. Prof. Physiol. and Direct. Physiol. Lab. Copenhagen, 1863; formerly Direct. Phys. Lab. at Kiel.

Author of "Experimentelle Untersuchungen über die Veränderungen der Mengenverhältnisse des Blutes und seine Bestandtheile durch die Inanition," *Virchow's Archiv*, 1861; "Haandbog i Meneskel's Physiologie," Copenhagen, 1872; "Untersuchungen über die Entstehung der Misbildungen zunächst in den Eiern der Vögel," Kiel, 1860.

Has principally experimented on transfusion, feeding, and starvation. Has starved dogs four weeks till death occurred. A whelp was bled till death convulsions set in and then revived by transfusion;

then again bled till even reflex movements could no longer be excited by touching the cornea, and again revived by transfusion. This was repeated four times; but the dog died half an hour after the last transfusion.—*Scandinavian Med. Archives*, 1875.

"On a dog of middle size I opened the trachea and inserted into it a glass tube. . . . Then I dissected out and isolated the nervi vagi; the animal was laid on its back and the thorax opened by cutting through the cartilage of the ribs and entirely removing the sternum. The pericardium was now opened . . . and artificial respiration introduced. Partly through the suffocation and partly through pain and terror, the movements of the heart grew very slow, small, and irregular . . . but after the artificial respiration had commenced, they got more vigorous. . . . Five minutes after I cut asunder both nervi vagi, at which operation the animal uttered no sign of pain. A minute after the movements of the heart were so greatly accelerated that it became difficult to count them. . . . It struck us that the heart seemed to have grown smaller than before we cut asunder the nervi vagi. . . . Then I stimulated (irritated) the peripheric ends of the cut nervi vagi with Neif's electric apparatus. Almost immediately the heart stood still in diastole. . . . The movements of the heart recommenced and grew more rapid and vigorous than ever, but this soon passed away. The ends of the nervi vagi were for a second time stimulated . . . and this proceeding was repeated six times, always with the same result. . . . The pain, which otherwise results from the nervi vagi being cut asunder, was eliminated, because the far greater pain, occasioned by the opening of the thorax, had, as every very painful operation will do, diminished the sensitiveness of the animal so much that it gave no evidence of pain at the cutting asunder of the nervi vagi. Without introducing artificial respiration at the opening of the thorax, I have repeated this experiment scores of times, and always with the same result."—Panum, *Scand. Medical Bibl.*, 1857.

"26th Ex. : I had opened the thorax of a dog and kept its life up by artificial respiration, having also cut the nervi vagi. Everything had gone as we desired. The heart worked vigorously and regularly, and the animal had full consciousness and sensitiveness. On applying the electrodes of Neif to the heart, its regular movements ceased immediately."—*Ibid*, p. 134.

Prof. Panum states that he has "employed" a great number of animals in experiments of transfusion and injections of putrid humours. For experiments on death by embolism he has employed some eighty dogs and rabbits.—"*Experimental Observations*," *Virchow's Archiv*, Vol. XXIX., 1864.

Pasteur, Louis. B. at Dole (Jura), 1822. Studied at Besançon; M.D., 1847; Prof. Physics, Lyceum, Dijon, 1849; Prof. Strasburg, 1852; Dean Fac. Sciences, Lille, 1854; Scien. Dir. Norm. Sch., Paris, 1857-1867; Prof. Geol. Physics and Chem. Ecole des Beaux Arts, 1863; Prof. Chem. Sorbonne, 1867; Mem. Acad. Sci., 1862; Direct. Lab. of Chem. Research, Fac. Sci., Paris; Med. (2) Roy. Soc. of Gt. Brit.; received Prize of 10,000 fs. from Austria, and another of 12,000 frs., and a State annuity for his works on silk-worms, beer, wines and vinegar.

Author of "Nouvel exemple de fermentation déterminé par des animalcules infusoires, pouvant vivre sans oxygène libre," 1863; "Études sur le vin, ses maladies, causes qui les provoquent, etc.,"

1866; *Études sur le vinaigre, ses maladies, moyens de les prévenir, etc.*, 1868; *Études sur la maladie des vers à soie*, 1870; *Études sur la bière*, 1878; *Les Microbes*, 1878, jointly with M. Tyndall, etc. Contrib. paper on "The attenuation of the virus of rabies," *Académie des Sciences*, May 19, 1884.

"M. Vulpian injected under the skin of rabbits saliva collected at the very moment of the experiment, from perfectly healthy individuals, and this injection killed the rabbit so inoculated in forty-eight hours. The blood of these rabbits was found to be filled with microscopic organisms; among which was a special organism discovered by M. Pasteur in the course of his experiments with inoculation of the saliva of a child who had died of rabies. One drop of this blood, diluted in ten grammes of distilled water, and injected under the skin of other rabbits, also brought on the death of these animals; the blood of which was similarly filled with microscopic organisms. These singular results, of which the interpretation is by no means easy, present also the no less singular peculiarity of not being stable. Rabbits placed in identical conditions, and inoculated with the same saliva, experienced no ill effects from their inoculation, and continued in excellent health. It would therefore appear that experimental microbiology is not yet on the way to become either an easy or clear science, notwithstanding M. Pasteur's *fiat lux*.—*Brit. Med. Journ.*, April 9, 1881, p. 571.

"The question of spontaneous generation I will not attempt to treat here as it would require special discussion. The experiments of M. Pasteur have only shown that under the experimental conditions with which he surrounded himself, conditions which were far from natural, he did not detect any spontaneous organisation of matter. Moreover, all those who have devoted themselves to science, with the sole aim of seeking the truth, as C. Bernard, Huxley, Hæckel, etc., while admitting that M. Pasteur's experiments had been properly conducted within the very narrow circle they occupied, have unanimously rejected the assertions and generalisations drawn from them by that savant himself."—Dr. Jousset de Bellesme, *Progrès Médical*, Vol. X., 1882, p. 340.

"It is now four years since the study of rabies was first commenced in my laboratory, and it has been continued without any other interruption than the enforced cessations which depend on the conditions of the enquiry, conditions which are very unfavourable. The incubation of the disease is always of long duration. There are never sufficient facilities to enable one at a given moment to multiply experiments. In spite of these material hindrances, which however the French Government, in its care for the great scientific interests involved, has done everything in its power to remove, the experiments which we, my fellow-workers and I, have carried out, have nevertheless passed beyond the possibility of numbering them. . . . If you take any street-dog you please and inoculate rabies in this manner by trephining, using as inoculating-material a portion of the bulb of an animal which has died of the disease, you will invariably convey rabies. The dogs to which the disease has been communicated in this manner are to be counted by hundreds. The method has never failed. The same operation has been performed on hundreds of guinea-pigs and on a yet greater number of rabbits, without a single failure."—Pasteur's "Address Delivered at the International Med. Congress at Copenhagen," Aug. 11th, "*Med. Times and Gazette*," Aug. 23rd, 1884.

"In the case where rabies is produced by a bite, or by hypodermic injection, interference with the length of the incubation period must be chiefly ascribed to the great variation which is possible in the amount, always indefinite, of inoculated poison which reaches the central nervous system. If then we wish to determine the intensity of the virus from the length of the incubation period, it is unavoidably necessary to have recourse to inoculation by trephining, which is absolutely certain in its effects, and to employ larger quantities than such as would be necessary simply to produce rabies. When we operate in this way, irregularities in the length of incubation with the same virus will show a tendency to entirely disappear, because we always obtain the maximum of effect which the virus can produce; that maximum corresponding to the minimum duration of incubation. Thus we have at length obtained a method which has enabled us to enquire into the possible existence of varying degrees of virulence, and to mutually compare them. The only secrets in this method, I repeat, are to inoculate by trephining, and to use a quantity of virus, which, although very weak, is more than sufficient to produce rabies in and by itself."—*Ibid.*

"As he says substantially in his published report on the subject of canine madness, which he read before a meeting of the Academy of Sciences on May 19, the first experiments he has made give him almost certain hope of success. But, notwithstanding his sanguine views as to the finally favourable results of his investigations, and their unqualified benefit to mankind, he has to 'multiply the proofs *ad infinitum* on different species of the brute creation.' When this shall have been done he will then try the remedy on man."—*Report of a Conversation with M. Pasteur, "Daily Telegraph,"* June 6, 1884.

Pavy, Frederick Wm., 35, Grosvenor Street, W. M.D. Lond., 1853; F.R.C.P. Lond., 1860; F.R.S.; Fell. Roy. Med. Chir. Soc.; Mem. Path. Soc.; Corr. Mem. Soc. Anat. Paris, and Med. Chir. Soc. Edin.; Mem. (formerly Vice-Pres.) Paris Med. Soc.; Fell. Med. Soc. Lond.; Phys. and Lect. on Med. (formerly Lect. on Physiol. and on Comp. Anat.) Guy's Hosp.; Goulston Lect. R.C.P. Lond., 1862 and 1863; Croonian Lect., 1878; Lettsom Lect. on Physiol. Med. Soc., 1859.

Author of "Researches on Sugar Formation in the Liver," *Philos. Trans.*, 1861; "Immunity of Stomach from being Digested by its own Secretion during Life," *Ibid.*, 1863; "Remarks on Physiological Effects of Strychnia and the Woorali Poison," *Guy's Hosp. Reps.*, 1866; "Lesion of the Nervous System producing Diabetes," *Ibid.*, 1869; "Lettsom Lectures on certain points connected with Diabetes," *Lancet*, 1860; etc.

Held a License for Vivisection at Guy's Hospital Museum Theatre and Lecture Room in 1878-79-80-81-82-83. Certificates for Illustrations of Lectures in 1878-79-80-81-82-83. No experiments returned in 1878.

"Has always illustrated his lectures by experiments (2108); but believes he was the first physiological lecturer in London who did so (2033). . . . For purposes of experiment uses dogs, rabbits, guinea-pigs, and frogs (2089-90); which are bought in the ordinary way at Leadenhall Market (2101-4); during the season about 20 dogs and 10 rabbits are used (2096)."—*Digest Ev. Roy. Com.*, p. 19.

"Through an opening in the stomach of a dog, Bernard introduced, while digestion was going on, the hind legs of a living frog. The legs were dissolved away, the animal continuing all the while alive. . . . I have repeated this experiment myself, and obtained a similar result." . . . "I performed an experiment, substituting the ear of a rabbit for the legs of a frog. . . . At the end of two hours the ear was withdrawn, and several spots of erosion were observed on its surface, but nowhere was it eaten through. On being replaced for another two-and-a-half hours, the tip to the extent of about half or three-quarters of an inch was almost completely removed, a small remnant of it only being left attached by a narrow shred to the remainder of the ear."—*Lancet*, No. 2,070.

Pawlow, S., St. Petersburg.

Author of "Folgen der Unterbindung des Pankreasganges bei Kaninchen;" "Zur Lehre ueber die Innervation der Blutbahn," Pflüger's Archiv, Vol. XX., p. 210, etc.

Made experiments in the Physiological Laboratory at Breslau; also in the Laboratory of Prof. Ustimowitsch at St. Petersburg.

"The *Journal of Anat. and Physiol.* for May, 1869, contains a short communication by Prof. Rutherford relating to the action of the section of the vagus on the blood pressure. According to Rutherford's experiments the results of section of the vagus depend upon the condition of the alimentary canal; when the canal is full, the section of the nerves occasions heightened pressure, whereas in starving animals this operation causes no alteration in the blood pressure. Rutherford thinks this phenomenon is caused by the depressory distention of the intestinal vessels by the food contained in them. He supposes that the sensory nerves ending in the vagus root are stimulated by the food. The division of these ducts occasions a reflex narrowing of the vessels and hence heightened pressure. This important hypothesis of Rutherford's (neither the amount nor the duration of blood pressure has been given, nor the time of feeding, etc.), has, as far as we know, not been tested experimentally, although the fact is often brought forward. This was the chief incentive which prompted me to make the following experiments:—All the experiments (twenty in all) were made exclusively on dogs, the directions given by Rutherford being carefully followed. The animals were immediately placed under the effects of curare. . . . The nervus vagi were cut through one after the other . . . other sensory nerves (mostly the Nervus dorsalis pedis) were cut. . . . The results of the experiments made by me in this manner were, excepting in two cases, diametrically opposed to the results described by Rutherford."—*Zur Lehre ueber die Innervation der Blutbahn*, Pflüger's Archiv, Vol. XX., p. 210.

Pekelharing, C. A. Prof. of Physiol., Utrecht Veterinary School, formerly Prof. at Leyden Univ.

Author of "Ueber die Harnstoffbestimmung," Pflüger's Archiv, Vol. II., p. 602; "Beitrag zur Kenntniss des Peptons," *Ibid.*, Vol. XXII., p. 185.

Pellacani Paolo. Prof. of Physiol. Univ. of Turin; formerly Prof. Univ. Libera, Ferrara, and Modena.

Author of "De l'action physiologique de quelques substances sur les muscles de la vessie des animaux et de l'homme," *Archives Ital. de Biol.*, Vol. II., 1882.

Made experiments in the Pharm. Lab., Strasburg, also at Physiol. Lab., Turin, on the exposed bladders of dogs. The bladders were sometimes "left in the abdominal cavity."—*Arch. Ital.*, Vol. II., p. 303. Also experimented on the effects of curare and strychnine.

Perroncito (Prof.), Turin. Scuola Veterinaria.

Made experiments with the virus of anthrax on sheep and oxen.

Peyrani (Prof.), Parma University.

Pfütger Emil. B. at Hanau, 1829. Prof. of Physiol. Med. Fac. Bonn University, Geheim. Med. Rath.

Author of "Beiträge zur Lehre der Respiration" in "Archiv für die gesammte Physiologie, 1875;" Editor of "Archiv für die gesammte Physiologie des Menschen und des Thiers," Bonn, 1868, etc.

Picard, P., Lyons. Prof. of Physiol. Med. Faculty.

Made experiments on the action of morphine in dogs.—*Gaz. Med. de Paris*, No. 12, p. 143.

Pierret (Mons.), Lyons. Prof. of Path. Anat. Med. Faculty.

Pitres, A., Paris.

Author (jointly with M. F. Franck) of "Recherches graphiques sur les mouvements simples et sur les convulsions provoquées par les excitations du cerveau," Travaux du lab. de M. Marey, 1878-79, p. 413.

Dogs trepanned, the brain stimulated, muscles of the paw dissected out, eyelids hooked back to study the change of the diameter of the pupil during electric stimulation of the brain.

Platt, W. B., Baltimore. M.D. (Harvard), M.R.C.S. (Eng.).

Made experiments on the action of Resorcin on dogs, rabbits, and frogs.

"Exp. 3.—A black and tan male dog, weight 4,675 grammes, injected at 5.08 p.m. April 10th, 1882, with 1.5 grammes dissolved in distilled water . . . This is injected in 5 places beneath skin of abdomen. . . . Up to 5.24 very restless. . . . 5.29. Same, seems very unhappy, tremor of hind legs. 5.30. Back arched as he moves about; holds up left fore-paw high in the air, quivering. . . . 5.44. Staggers, tumbles, steps about constantly. . . . 11th.—Dog of yesterday seen at 3.20 p.m. . . . Drags hind legs after him, as if paraplegic, with much difficulty manages to stand. A viscid saliva drops from mouth. . . . 3.40. Froths copiously at mouth; lies down as if to sleep. . . . 6.14. Gasps, barks, foams at mouth, eyes glare, jaws snap. . . . 6.36. Struggles further, a violent spasm, head drawn back at right angles to body, intermittent jerking of limbs . . . 7.22. Dog appears almost normal, with slightly rapid respiration. Still does notice noises or objects; greatly exhausted; animal *now left*." "12th.—At 6 a.m. animal found dead after at least 26 hours."—"*Observations on the Action of Resorcin*," *Amer. Journ. of Med. Sci.*, Jan., 1883, p. 100.

Piso-Borme (Prof.), Cagliari University.

Popoff, Leo. Phys. and Prof. Univ. St. Petersburg.

Author of "Ueber die natürliche pathologische Injection der Gallengänge und einige andere, nach der Unterbindung des Ductes

choledochus bei Thieren beobachtete pathologische Erscheinungen," Virchow's Archiv, Vol. LXXXI. (1880), p. 524; "Ueber die Folgen der Unterbindung der Ureteren und der Nierenarterien bei Thieren, im Zusammenhang mit einigen anderen pathologischen Prozessen," Ibid, Vol. LXXXII., p. 40.

Made experiments on rabbits and dogs.

Pouchet, Félix Archimède. Born at Rouen, 1800. Died at Rouen, 1872. M.D. Paris, 1827; Prof. Nat. Hist. Museum of Rouen; Prof. Med. Sch. Rouen, 1838; Member of several Learned Soc's.

Author of "Histoire naturelle de la famille des Solanées," Rouen, 1829; "Zoologie classique, ou Histoire naturelle du règne animal," 1841; "Recherches sur l'anatomie et la physiologie des mollusques," 1842; "Théorie positive de l'ovulation spontanée, et de la fécondation des mammifères et de l'espèce humaine, basée sur l'observation de toute la série animale," 1847; "Monographie des genre hérite," 1847; "Traité élémentaire de Botanique appliquée," 1835; "Recherches sur les organes de la circulation, de la digestion, et de la respiration des animaux infusoires," 1849; "Histoire naturelle et agricole du hanneton et de sa larve," Rouen, 1853; "Histoire des Sciences naturelles au Moyen-Age," 1853; "Hétérogénie, ou Traité de la génération spontanée," 1859; "Recherches et expériences sur les animaux ressuscitants," 1859; "Nouvelles expériences sur la génération spontanée et la résistance vitale," 1863; "L'Univers, les infiniment grands et les infiniment petits," 1865.

Pouchet, Henri Ch. Georges, Paris. (Son of the preceding.) B. at Rouen, 1833. M.D. Paris, 1864; Replaced Paul Bert at the Sorbonne in 1875; Prof. Comp. Anat. Museum Nat. Hist., 1879; Prof. of Biological Chemistry, Medical Faculty.

Author of "De la Pluralité des Races Humaines," 1858; "Histoire Humaine," 1863, etc., etc.

Made experiments on the extirpation of the spleen in animals, fishes, and pigeons; also with electricity on fishes.

Power, D'Arcy, 27, Gt. Cumberland Place, Hyde Park, W. B.A. Oxon. (Exhib. in Nat. Sci. Exeter Coll., 1st class in Nat. Sci.), 1878; M.A., 1881; M.B., 1882; M.R.C.S. Eng., 1882; (Oxon., St. Bartholomew, Vienna, and Dub.); House Surg. (late Ophth. House Surg.) St. Barthol. Hosp.; Asst. Demonstrator of Physiol. St. Barthol. Hosp. Med. Sch., 1878-81.

Author of various articles in Quart. Micros. Journ., St. Barthol. Hosp. Repts. &c.; joint author (with Dr. V. D. Harris) of "Handbook for the Physiological Laboratory," 1882.

Power, Henry, 37A, Great Cumberland Place, W. M.B. Lond. (Univ. Med. Schol. in Surg. and Comp. Anat.), 1855; F.R.C.S. Eng., 1854; M., 1851 (St. Barthol.); Exhib. in Anat. and Physiol. Univ. Lond., 1852; Fell. Roy. Med. Chir. Soc.; Mem. Path. Soc.; Mem. Counc. (late Arris and Gale Lect. on Anat. and Physiol.) R.C.S. Eng.; Sen. Ophth. Surg. and Lect. on Ophth. Surg. St. Barthol. Hosp.; Cons. Ophth. Surg. St. Barthol. Hosp., Chatham; Exam. in Anat. and Phys. R.C.S. Eng.

Editor of 6th, 7th, 8th, and 9th edit. of Dr. Carpenter's "Principles of Human Physiology," 1864-69-76; "Illustrations of the Principle Diseases of the Eye," 1869; Transl. of "Stricker's Manual

of Human and Comparative Histology," New Syd. Soc. 1870; and of "Erb on the Diseases of the Nervous System," Ziemssen's Cyclop.; Editor (with Dr. Sedgwick) of "Mayne's Expository Lexicon."

Made experiments with Dr. Lauder Brunton on the diuretic action of Digitalis.

Preyer, Thierry William, Jena University. Born at Manchester, 1841; M.D. 1866 (Univ. Bonn, Berlin, Heidelberg, Vienna, and Paris); Prof. Physiol. Jena, 1869, and Direct. of the Physiol. Instit.

Author of "Die Blausauere," Bonn, 1868-70, "Reise nach Island im Sommer," 1860; "Ueber die Aufgabe der Naturwissenschaft," Jena, 1866; "Die Empfindungen," Berlin, 1867; "Der Kampf um das Dasein," Bonn, 1868; "Die Blutkrystalle," Jena, 1871; "Ueber die Ursache des Schlafs," Stuttgart, 1877; "Ueber die Grenzen der Tonwahrnehmung," Jena, 1876; "Elemente der reinen Empfindungslehre," Jena, 1877; "Die Kataplexie und der thierische hypnotismus," Jena 1878; "Akustische Untersuchungen," Jena, 1879.

Priestley, John. Asst. Lect. in Physiol. Owen's Coll., Manchester.

Author of "An Account of the Anatomy and Physiology of Batrachian Lymph-Hearts," "Journ. of Physiol.," Vol. I., No. 1, p. 1.

Made experiments in the Physiological Laboratory of Owen's College, Manchester; also jointly with Prof. A. Gamgee, on dogs, rabbits, and frogs.

Prudden, T. Mitchell. M.D. Direct. of the Physiol. and Pathol. Lab. of the Alumni Association of the Coll. Phys. and Surg., New York; Lect. on Normal Hist. in Yale Med. Coll. Pathol. to the Manhattan Eye and Ear Hosp.

Author of "Action of Salicylic Acid upon Blood Cells," Amer. Journ. of Med. Sci. 1882, p. 64; "Rhabdomyoma of the Parotid Gland," Ibid, 1883, p. 438; "Experimental Studies on the Transplantation of cartilage," Ibid, 1881, p. 360.

"Action (of Salicylic Acid) on the Circulation and Emigration.—This was studied in the bladder and mesentery of the living curarized frog, Thorm's frog-plate being used as in the former experiments."—*Amer. Journ. of Med. Sci.*, 1882, p. 67.

Puglia, Guiseppe. Prof. Classe Zootatrice, Modena.

Pugliatti, Guiseppe. Prof. Messina University.

Purser, John Mallet, 3, Wilton Terrace, Dublin. M.D.T.C.D., 1874; M.B., 1863; F.R.Q.C.P. Irel., 1876; L. and L.M., 1866; L.R.C.S.T., 1863; L.M. Rot. Hosp. Dub., 1863; (Univ. Dub. and Carm. Sch.); Mem. Path; Soc. Dub., and Med. Soc. Coll. Phys.; Prof. of Insts. of Med. Sch. of Physic. T.C. Dub.; Lect. on Physiol. Carm. Sch. of Med.

Contrib. papers to various journals.

Held a License for Vivisection at Laboratory Medical College, Dr. Steeven's Hospital, Dublin, Physiological Laboratory, Carmichael School of Medicine, and 212, Great Brunswick Street,

Dublin, in 1878 and 1879; also in 1888, at Physiological Work-room, 3, Wilton Terrace. No Experiments returned in 1878 and 1879.

"Considers that experiments on live animals are necessary for demonstration, the greater number would be under anæsthetics (4793-99A), but some painful ones on the sensitive nerves of warm-blooded animals are desirable (4793-99A)."—*Digest Ev. Roy. Com.*, London, 1876, p. 35.

Putnam, James J. M.D. Boston, United States.

Author of "Contribution to the Physiology of the Cortex Cerebri," "Boston Surgical and Med. Journ.," 1874, No. 16.

Pütz, H. Prof. Extraord. Halle Univ.

Injected human tuberculous matter into horses. Results negative. Also fed a calf on 3½ lbs. of tuberculous human lung, and kept it alive 170 days. Results equally negative. Tuberculous matter injected into the lungs and abdomen of calves.—*Deutsche Med. Wochenschrift*, 1882, No. 48, p. 662.

Putzeys, Felix. M.D. Liège.

Joint author (with Aug. Swan) of "Ueber die physiologische Wirkung des Schefelsauren Guanidins," *Pfűger's Archiv*, Vol. XII., p. 597.

Experiments on frogs with guanidin. Spinal narrow cut, nervus ischiadicus cut and stimulated, then guanidin injected. Frogs hung up by a string through the chin and hind members dipped into guanidin. Heart exposed, nervus vagus cut, and guanidin injected.

Pye, Walter, 4, Sackville Street, Piccadilly, W., and Thatched House Club, St. James's Street, S.W. F.R.C.S. Eng., 1878; M. 1876 (St. Barthol.); Fell. Roy. Med. Chir. Soc. and Med. Soc. Lond.; Mem. Harv. and Ophth. Socs.; Lect. on Physiol. St. Mary's Hosp. Med. Sch.; Asst. Surg. Victoria Hosp. for Children; Anat. Asst. Mus. R.C.S. Eng., House Surg. and House Phys. St. Barthol. Hosp.; Lect. on Physiol. St. Mary's Hosp. Med. Sch.

Contrib. to *Philos. Trans.*, Practitioner, 1877, and other Med. Journals.

Held a License for Vivisection at St. Bartholomew's Hospital Medical School, 1878 and 1879. Certificate for Experiments without Anæsthetics conjointly with Dr. Lauder Brunton in 1879. This Certificate not acted upon. No experiments returned in 1878.

Pye-Smith, Philip Henry, 54, Harley Street, Cavendish Square, W. B.A. Lond. (Hon.) 1858; M.D. (Gold Medal), 1864; M.B. (Hon.) 1863; F.R.C.P. Lond., 1870; M. 1865 (Guy's and Continental Schools); Exam. in Physiol. Univ. Lond.; Sen. Asst. Phys. and Lect. on Physiology Guy's Hosp.; Secretary of the Association for the Advancement of Medicine by Research.

Author of "Address to the Department of Anatomy and Physiology," *Brit. Ass.*, 1879; Report (with Dr. Brunton) on "Intestinal Secretion," etc., etc.

Held a License for Vivisection at Guy's Hospital Museum Theatre and Lecture Room in 1878-79-80-81-82-83. Certificates for Illus-

trations of Lectures in 1878-79-80-81-82-83. Certificates Dispensing with obligation to kill in 1878-79-80-82-83. Certificates for Experiments on Cats, Dogs, Horses, Mules, or Asses, in 1878. No experiments on Horses, Mules, or Asses returned.

"Considers that the study of Physiology in its full sense is impossible without vivisection."—*Digest Br. Roy. Com.*, p. 19.

Quinke, H. B. 1834, at Frankfort-on-the-Oder. Prof. Wurzburg, 1878; afterwards Med. Councillor, Direct. of Clinic. at Kiel.

Author of "Beiträge zur Lehre von Icterus," *Virchow's Archiv*, 1884, Vol. V., Book i., p. 125.

Made experiments on dogs, rabbits, mice, and pigeons.

Radcliffe, Chas. Bland, 25, Cavendish Square, W. M.D. Lond., 1861; M.B., 1845; F.R.C.P. Lond., 1858; L., 1848; Goulston Lect. 1860; Croon. Lect. 1873; Censor. 1875-76; Fell. Roy. Med. Chir. Soc.; Cons. Phys. Westm. Hosp.

Author of "Proteus, or the Law of Nature;" "On Epilepsy, Pain, Paralysis, and certain other Disorders of the Nervous System," 1883; etc., etc.

Held a License for Vivisection at University College London, 1878. Certificate Dispensing with obligation to kill, 1878.

Rambaud (Prof.), Rue de l'Hôtel-de-Ville, 77, Lyons. Prof. of Medicine Med. Faculty.

Ranvier, L., Boulevard Saint Michel, 105, Paris. Prof. of Anatomy Med. Fac., College of France.

Author of "Recherches sur les éléments du sang," *Travaux du Laboratoire d'histologie*, 1875; "Leçons d'anatomie générale," Paris, 1880.

Ravaglia, Giuseppe (Prof.), Bologna University.

Raynaud, Maurice. B. 1834; d. 1881; late Phys. at La Charité, Paris; Agrégé of the Fac. of Med.; Mem. of Section of Med. Path. Acad. of Med.; and Officer of the Legion of Honour.

Author of "De la transmissibilité de la rage de l'homme au lapin," *Compt. Rend.*, Vol. LXXXIX. (1879), p. 714.

"M. Raynaud has communicated the results of experimental researches he has made with M. Lannelongue on the transmission of rabies from man to rabbits. . . . In a second series of experiments, inoculations have been made with different liquids extracted from the tissues of the dead body. . . . Finally, inoculations were made from rabbit to rabbit under the most varied conditions; with the salivary glands, and the lymphatic ganglions; death was the result. It remains to be seen whether the disease thus communicated was really hydrophobia. MM. Colin, Dejean, Baumetz, and Pasteur think it was not. M. Raynaud, himself, only asserts the fact weakly, as he draws attention to the absence of the period of excitement, the short time of incubation, the extreme rapidity with which death ensues; lastly, he mentions cases where inoculated animals have recovered after a few days' illness. . . . M. Gosselin thinks the surest method of recognizing the disease would be by retransmission from the rabbit to the dog."—*Archives générales de Médecine*, Vol. I. (1881), p. 369.

Redfern, Peter, 4, Lower Crescent, Belfast, and Templepatrick House, Donaghdee. M.B. Lond., 1844; M.D., 1847; M.R.C.S. Eng., 1848; F. (exam.) 1851; L.S.A., 1844; Corr. Mem. Soc. de Biol. Paris; Hon. Mem. Acad. Roy. de Méd. de Belgique; Prof. of Anat. and Physiol. Qu. Coll. Belfast; Mem. Senate and Exam. in Anat. and Physiol. Qu. Univ. Irel.; Exam. Anat. Univ. Ireland; Lect. on Anat. and Physiol. and Exam. King's Coll. Aberdeen.

Author of "Abnormal Nutrition in Articular Cartilages, with Experimental Researches on the Lower Animals" 1850, etc., etc.

Held a License for Vivisection at Queen's College Belfast Physiological Laboratory in 1879-80-81-82-83. No experiments returned in 1882 and 1883.

Régnauld, Henri Victor. B. at Aix-la-Chapelle, 1810; D. 1878. Studied at the École Polytechnique; Engineer-in-Chief of Mines, 1847; Director of the Porcelain Manufactory of Sèvres, 1854; Prof. of Physics, Collège de France, and of Chemistry at the École Polytechnique, 1840; Member of French Acad., 1840.

Author of "Cours élémentaire de Chimie."

Regnard, Paul, Boulevard St. Michel, 46, Paris. Prof. of Physiol. La Sorbonne.

Inventor (with Félix Jolyet) of a machine to study the modifications of the products of respiration.—*Gaz. Med. de Paris* (1877), p. 190-179.

Reichert, C. B. Prof. of Theoretical Hist. and Anat. Med. Fac. Univ. Berlin.

Co-editor (with Du Bois-Reymond) of "Archiv. für Anatomie und Physiologie."

Rémy, Charles, Avenue Victoria, 18, Paris. M.D. Paris, 1878. Phys. La Charité, formerly prosector of Med. Sch., Reims; Mem. Société Anatomique.

Author of "Développement des tissus cartilagineux et osseux," Paris, 1880.

Retzius, G. Prof. of Med. at Stockholm.

Made experiments with chromacid, chromacid ammonia, etc., on the retina of various animals—toads, hens, rabbits, oxen.

Reymond. (*See* Du Bois Reymond.)

Richards, Vincent, Goalundo, Bengal. F.R.C.S., Edin., 1882; M.R.C.S., Eng., 1863 (Guy's); Mem. Asiat. Soc., Bengal; Civil Surg.; Superint. Emigr., Calcutta Port; Surg. E.B.R.V.; Late Mem. Comm. for Investigat. of Snake Poisoning.

Joint Author of "Report on Indian and Australian Snake Poisoning." Contrib. of "Cholera amongst Emigrants," *Ind. Med. Gaz.*, 1881, "Experiments with Permanganate of Potash in Cobra Poisoning."—*Ibid.*, 1882, etc.

Has made experiments on pigs with cholera virus.—*Lancet*, May 3rd, 1884, p. 814.

Richet, L. Alfred, Laboratory of the Hôtel Dieu, Paris. M.D., 1844; Res. Surg. Hosp. St. Louis, 1858; La Pitié, 1863; Hôtel Dieu, 1872; Prof. Clin. Surg. Medical Faculty; Mem. Acad. of Med. 1865.

Author of "*Traité pratique d'Anatomie Médico chirurgicale*" 1850 and 1873; Contrib. of numerous Articles to "*Archives Générales de Médecine*;" also "*Le Roi des Animaux*," "*Revue des Deux Mondes*, Tom. 55."

M. Richet has found that strong and repeated electrical stimulation, will cause, in rabbits and dogs, a tetanus comparable in its results to the traumatic form.

"In the dogs the electricity employed was not sufficiently powerful to arrest respiration, and death was due to the elevation of temperature. The ascent of the thermometer was extremely rapid, so that after the tetanus had lasted for half-an-hour, the lethal temperature of 111 or 112 F. was reached. . . . The proof that the increased body heat was the cause of death was furnished by the fact that if the animal is kept cool by artificial means it may bear for more than two hours extremely strong currents, which cause severe tetanus without dying for some days. The capacity for generating this great temperature under electrification does not disappear even after prolonged application, and it is not influenced by previous fasting for two or three days. . . . Usually death occurs when a temperature of 112° is attained, but in some cases it reached 112.5 and even 113. If the temperature did not rise above 110° death did not ensue on the same or the following day; after this point however, although death may not be immediate, it occurs within 24 hours. . . . At 111° the breathing is so frequent that it is hardly possible to count it and so feeble that scarcely any air enters the thorax."—*Lancet*, September 17th, 1881, p. 515.

Richet, Charles, Rue Bonaparte, 5, Paris. B. at Paris 1850. M.D., Paris, 1877.

Author of "*Recherches expérimentelles et cliniques sur la sensibilité*," Paris, 1877.

Made experiments on fishes reported to the Acad. de Sciences, Oct. 24, 1881.

"Pain is a purely central phenomenon. It is a sensation that may exist, even to intensity, without manifesting its presence by any external sign, and consequently it is impossible to gauge it. All physiologists know that during vivisection there is an entire dissimilarity in the manner in which animals seem to suffer. Some remain motionless, the eyes fixed, neither struggling nor moaning; they appear as if struck by stupor. Others on the contrary groan and howl, never remaining a moment without struggling or endeavouring to escape. Every incision that is made, every laceration, every pull is instantly followed by a shock which interferes with the result of the experiment. . . . I will point out, moreover, the fact observed by the physiologists at Alport. The blood of the animals used for operations is almost devoid of fibrine, like the blood of animals that have been overworked. As regards dyspepsia and disorders of the digestive functions which prolonged pain brings on, the phenomenon is rather psychical than physiological, and pain acts similarly to grief and privation."—"*Recherches expérimentelles et cliniques sur la sensibilité*," *Collection de Thèses Ecole de Médecine*, Paris, 1877, p. 255.

"When it is a question of scientific research one must act resolutely, without considering the pain."—*Revue des deux Mondes*, Feb. 15, 1883.

"I do not believe that a single experimenter says to himself when he gives curari to a rabbit, or cuts the spinal marrow of a dog, or poisons a frog: 'Here is an experiment which will relieve or will cure the disease of some men.' No, in truth, he does not think of that! He says to himself 'I shall clear up an obscure point, I will seek out a new fact.' And this scientific curiosity which alone animates him, is explained by the high idea he has formed of Science. This is why we pass our days in foetid laboratories (*dans les salles nauséabondes*), surrounded by groaning creatures, in the midst of blood and suffering, bent over palpitating entrails."—*Ibid*.

"Science has nothing to do with utility, or rather the true utilitarians are those who have hope in the science of the future."—*Ibid*.

Ringer, Sydney, 15, Cavendish Place, W. M.D. Lond., 1863; M.B., 1860; F.R.C.P. Lond., 1870, M. 1863; M.R.C.S. Eng. and L.S.A. 1859 (Univ. Coll.); Prof. of Med. Univ. Coll.; Phys. and Prof. of Clin. Med. (late Res. Med. Off.) Univ. Coll. Hosp.; late Asst. Phys. Childr. Hosp. Great Ormond Street and Clin. Asst. Consump. Hosp. Brompton.

Author of "Ringer's Handbook of Therapeutics," 10th Edit., London, 1883; "On the Temperature of the Body," &c., London, 1883.

Held a License for Vivisection at University College London Physiological Theatre in 1878 and 1879.

"In addition to these experiments, we have made some observations clinically. To eighteen adults—fourteen men and four women—we ordered ten grains of the pure nitrite of sodium in an ounce of water, and of these seventeen declared that they were unable to take it. They came back, protesting loudly, and required no questioning as to the symptoms produced. They seemed to be pretty unanimous on one point—that it was about the worst medicine (!) they had ever taken. They said if they ever took another dose they would expect to drop down dead, and it would serve them right. One man, a burly, strong fellow, suffering a little from rheumatism only, said that after taking the first dose he 'felt giddy,' as if he would 'go off insensible.' His lips, face, and hands turned blue, and he had to lie down for an hour and a half before he dared move. His heart fluttered, and he suffered from throbbing pains in the head. He was urged to take another dose, but declined on the ground that he had a wife and family. Another patient had to sit down for an hour after the dose, and said that it 'took all his strength away.' He, too, seemed to think that the medicine did not agree with him. . . . The women appear to have suffered more than the men! at all events, they expressed their opinions more forcibly. One woman said that ten minutes after taking the first dose—she did not try a second—she felt a trembling sensation all over her, and suddenly fell on the floor. Whilst lying there she perspired profusely, her face and head seemed swollen and throbbed violently, until she thought they would burst. . . . Another woman said she thought she would have died after taking a dose; it threw her into a violent perspiration, and in less than five minutes her lips turned quite black and throbbed for hours; it upset her so

much that she was afraid she would never get over it, The only one of the fourteen patients who made no complaint after taking ten grains was powerfully affected by fifteen. . . . The effect on these patients was so unpleasant that it was deemed inadvisable to increase the dose."—*Lancet*, Nov. 3, 1883.

"In addition to these observations on patients, I made six temperature experiments on rabbits, but the results obtained were simply *nil*. I soon found—a fact with which I was previously acquainted—that, in those animals, fright exerts a marked influence on the temperature."—*Handbook of Therapeutics*, p. 516.

"Dr. Rickards and I gave to an habitual drunkard, making him 'dead drunk,' twelve ounces of good brandy in a single dose, without the slightest reduction of temperature."

"In a boy aged ten, who had never in his life before taken alcohol in any form, I found, through a large number of observations, a constant and decided reduction of temperature."—*Ibid.*, pp. 340-1.

Roberty, O., 4, Place de la Corderie, Marseilles. Prof. of Exper. Physiol. School of Medicine.

Robin, Ch. Phil., 94, Boulevard Saint Germain, Paris. M.D. Paris, 1846; Prof. Histol. Med. Faculty Paris, 1862; Mem. Acad. Med., 1858; Mem. Biol. Entomological Anatomical Soc. of Paris; Corr. Acad. Med. Chir. Stockholm; Mem. Institute of France; Senator.

Author of "Fermentation" 1848; "Microscopical Anatomy;" 1868-69; "Cellular Anatomy and Physiology," 1873, and numerous other works; "Journal de l'Anatomie et de la Physiologie normales et Pathologiques de l'homme et des animaux" Paris, 1864-1880.

Röhmnn, F. M.D.; Asst. at Physiol. Inst., Breslau.

Author of "Beobachtungen an Hunden mit Gallenfistel," *Pflüger's Archiv*, Vol. XXIX., p. 509.

Rolleston, George, M.D. Oxon., 1857; M.B., 1854; F.R.C.P. Lond. 1859, M. 1856, (St. Barthol.); late F.R.S., F.L.S., F.Z.S.; Mem. Gen. Med. Council. Linacre Prof. of Anat.; Hon. Phys. Radcliffe Infirmary; late Lee's Reader in Anat., etc., etc.

Contrib. "The Brain of Man, and the Brains of Certain Animals," "Medical Times and Gazette," 1862, etc.

Held a License for Vivisection at University Oxford Anatomical Department of Museum in 1878.

"Vivisection is specially likely to tempt a man into certain carelessness; the passive impressions produced by the sight of suffering growing as is the law of our nature, weaker, while the habit of, and the pleasure in experimenting grows stronger by repetition."—Evid. Roy. Com., Q. 1287.

"It is not so easy a thing to know when you have an animal thoroughly anæsthetised; and what is more, some animals recover with much greater rapidity than others of the same species from the same doses of anæsthetics."—*Ibid.*, Q. 1349.

Rollet (Prof.), Gratz University.

Rosenthal, Isidor, B. 1836, Erlangen. M.D. Berlin Univ.; Prof. Physiol. and Hygiene at Med. Fac. Univ. of Erlangen.

Author of "Athenbewegungen u. Innervation derselben, thierische Wärme," in Hermann's "Handbuch der Physiologie;" "Allgemeine Physiologie der Muskeln u. Nerven," in "Internationale Wissenschaftliche Bibliothek;" "Bier u. Branntwein u. ihre Bedeutung für die Volksgesundheit," 1881.

Rosbach, Michael Joseph. Prof. Med. Fac. Univ. Jena; Director of the Clinic and Policlinic.

Author of "Pharmakologische Untersuchungen," Würzburg, 1876; "Ueber den Einfluss der Künstlichen Respiration auf Strychninvergiftung," Centralbl. f. d. Med. Wiss., 1873, No. 24; "Neue Studien ueber den Physiologischen Antagonismus der Gifte," Pflüger, Vol. XXII., p. 1.

Experiments on curarised dogs and cats: Nerves dissected out and stimulated, drugs injected. (*See* Luchsinger.)

"At the same time Rosbach also studied the influence of artificial respiration on the cramps induced by strychnine. He totally contradicts the results observed by Leube. Artificial respiration, he finds, does not alter the effects of poison, whether it be given in doses sufficient to produce cramps only or in fatal doses."—Eckhart's *Beiträge*, Vol. X. (1883), p. 40.

Roth, Wladimir. M.D.; ex-Chef de Clin. at Univ. of Moscow. Made experiments with the Venom of Salamanders on frogs.—Rep. in *Gaz. Méd. de Paris*, 1877, p. 409.

Roy, Charles Smart, Cambridge. M.B. Edin. and C.M. 1875 (Univ. Edin.) M.D. Edin. 1878, (Edin.) G. H. Lewes, Scholar; late Brown, Prof. of Pathol. Univ., of London; Prof. of Pathol. Univ. of Cam., 1884; formerly Asstn. to Prof. of Physiol. Univ. of Strasburg. Contrib. to Journ. of Physiol., Du Bois Reymond's Archiv. and Virchow's Archiv.

Held a License for Vivisection at Cambridge University New Museum Physiological Laboratory and at Brown Institution, London, in 1880-81-82-83. Certificates for Illustrations of Lectures and for Experiments on Cats, Dogs, Horses, Mules or Asses, in 1882. Special Certificates for Experiments without anesthetics and Certificate permitting Experiments on Cats, Dogs, Horses, Mules or Asses in 1883. No Experiments returned on Horses, Mules or Asses.

"Let me refer to what has been done by Dr. Roy in 1880, partly in the Physiological Laboratory at Cambridge, and partly in the Leipzig Philological Institute, the experiments being carried out on rabbits, cats, and dogs. The animal was placed under curare, artificial respiration was used, that is to say, a tube was pushed down the animal's windpipe, and worked by an engine in regular puffs in order to keep the blood oxygenated. Then the back, skull, chest, and abdomen were opened. I don't suppose these were always opened in one animal, as in many cases the animal would have died. No doubt sometimes part of the experiment took place on one, and sometimes on another. The various organs were dissected out. The principal nerves such as the sciatic nerve and so on, were tied in two places and cut. This lasted for many hours. It is stated

the animal was under the influence of anæsthetics, but the use of curare is admitted. In the most scientific opinion, when curare is used, it neutralizes the use of the anæsthetic. I feel myself at a great disadvantage in treating of these matters as compared with the gentlemen beside me; but if I am making a mistake, I trust I may be corrected. In this instance, however, I believe I am right. Curare creates paralysis, it paralyzes the muscles and prevents the animal resisting or showing the symptoms by which alone the existence of anæsthesia can be tested."—*Mr. Reid's Speech in House of Commons, April 4th, 1883.*

"It was first sought to obtain information upon this subject by investigating the manner and extent to which the action of the heart is affected by obstruction of the renal arteries and the other large branches of the aorta; the facts obtained by taking this line of inquiry were not however of a kind fitted to throw light upon the problem which it was specially desired to solve. It soon became evident that an investigation of the manner in which the renal secretion and circulation are nominally regulated, and the relation which these bear to the regulating mechanism of the systemic circulation, would be best fitted to supply information of the kind required. The method employed, was to record graphically the changes in volume of one or both kidneys, while at the same time the changes in the blood-pressure in the aorta and the rapidity with which the urine was secreted were also recorded on the same revolving cylinder or, as continuous tracings, upon the paper of Ludwig's kymograph. The method used for recording the changes in volume of the kidney is the same in principle as that of the plethysmograph. The kidney is enclosed in a rigid metal box, the arrangement being such that while the organ can freely expand or contract, and while the changes in volume are recorded by a lever writing with a light glass pen upon the kymograph paper, no obstruction is offered to the entrance and exit of blood by the renal vessels nor to the outflow of urine by the ureter. The kidney is surrounded by warm olive oil, which, however, is not in immediate contact with its surface, but is separated from it by a delicate flexible membrane of a kind which has already been referred to by the author in several of his published papers, and which prevents any escape of the oil by the side of the blood-vessels and other structures entering the hilus of the gland. . . . When the instrument is in use, the kidney lies between two delicate, exceedingly flexible membranes, which apply themselves closely to its surface and to the surface of the structures entering the hilus of the organ, and each of these membranes forms with each of the symmetrical halves of the box a chamber which is filled with oil and which communicates by a relatively wide flexible tube with the recording instrument."

* * * * *

Experiment "4. After the immediate effect of the operation has passed off, the volume of the kidney will usually remain unchanged (with exception of the changes due to the pulse and respiration) for many hours unless some change in the conditions of the experiment be intentionally introduced.

"5. When the *Traube-Hering* curves of the blood-pressure present themselves, the volume of the kidney does not expand with the rhythmic rise in the blood-pressure. With each rise of the blood-pressure the kidney *contracts*, expanding with each fall

of the blood-pressure. The renal vessels are, therefore, amongst those to the rhythmic contraction and expansion of which the *Traube-Hering* waves are due.

"6. Arrest for 3 or 4 minutes of the artificial respiration, where that is employed, and where curare has been previously injected, causes a contraction of the renal vessels (which may reach 12 per cent of the post-mortem volume of the kidney) simultaneously with the rise of aortic blood pressure which is produced by the asphyxia.

"7. Stimulation of the medulla oblongata by weak induced currents causes a powerful contraction of the renal vessels.

"8. Stimulation of the central end of a sensory nerve, *e.g.*, sciatic, brachial plexus, splanchnic, &c., causes a contraction of the renal vessels simultaneous with the rise in the aortic blood-pressure. Stimulation of the central end of the vagus causes a contraction of the kidney (where the vagus of the other side has been cut to eliminate reflex inhibition of the heart), and the renal vessels *contract* whether the stimulation of the central end of the vagus cause a rise or a fall of the aortic blood-pressure.

"9. Stimulation of nearly all the roots of the splanchnic in the thorax, and of both larger and smaller splanchnic nerve-trunks causes contraction of the kidney of the *opposite* side. The extent to which the kidney contracts on stimulation of the splanchnic is usually very considerable. In one case the kidney contracted on stimulating with a strong induced current for three minutes to an extent which was equal to 63 per cent. of the post-mortem volume of the organ.

"10. In nearly every case stimulation of the peripheral end of the cut splanchnic at the point where it passes through the diaphragm causes contraction of *both* kidneys; the kidney of the side opposite to the nerve stimulated commencing to contract later than the one on the same side as the stimulated nerve.

"11. Stimulation of the central end of a sensory nerve, or of the medulla oblongata, or of the cervical spinal cord, causes a contraction of the renal vessels after *both* splanchnics have been cut at their point of entrance into the abdominal cavity. Vaso-constrictor influences may therefore pass from the spinal cord to the kidney by some other path than the two splanchnics.

"12. Section of the splanchnic does not always cause an expansion of the renal vessels, a fact which would make it doubtful whether a vascular tonus of the renal vessels emanating from the vaso motor centre or centres in the spinal cord is normally present.

"13. Stimulation of the *central* ends of the majority of the fine nerves which enter the kidney along with the vessels causes a contraction of the vessels of the kidney.

"14. Stimulation of the *peripheral* end of each and all of the renal nerves which accompany the vessels causes a contraction of the organ.

"15. After section of all but one of the (usually from 7 to 11) nerves accompanying the renal vessels, stimulation of the peripheral end of the splanchnic or of a sensory nerve still causes a contraction of the kidney which differs but little in amount from that produced by the same stimulation when all the renal nerves were

intact, but which takes longer time to show itself after the stimulation."—Extracts from paper "*On the Mechanism of the Renal Secretion*," by C. S. Roy, M.D.; read before the Cambridge Philosophical Society, May 23, 1881.

Russo, Antonio. Prof. of Physiol. Med. Fac., Palermo University.

Rutherford, William, University, and 14, Douglas Crescent, Edinburgh. M.D. Edin., 1863 (Thesis Gold Medallist); M.R.C.S. Eng.; (Univ. Edin., Berlin, Vienna, Paris); F.R.S.; Prof of Insts. of Med. Univ. Edin.; formerly Prof. of Physiol. King's Coll. and Roy. Inst. Lond.; Annual Pres. Roy. Med. Soc. Edin. and King's Coll. Med. Soc.

Author of "Outlines of Practical Histology," 1877; "A Text Book of Physiology," 1880; "Influence of the Vagus upon the Vascular System;" Trans. Roy. Soc. Edin., 1870; "On the Physiological Action of Drugs on the Secretion of Bile;" *Ibid*, 1879; "Lectures on Experimental Physiology;" *Lancet*, 1871-72; etc., etc.

Held a License for Vivisection at University Edinburgh, Physiological Lecture Room and Laboratory in 1878-79-80-81-82-83; Certificates for Illustrations of Lectures in 1878-79-80-82-83; also a Certificate for Experiments without Anesthetics; two Certificates dispensing with obligation to kill; and two Certificates for Experiments on Cats, Dogs, Horses, Mules, or Asses, in 1878; No Experiments on Horses, Mules, or Asses.

"I will take one instance from certain experiments performed by Professor Rutherford, and reported in the *British Medical Journal*. I refer to the series of experiments commenced December the 14th, 1878. These experiments were 31 in number; no doubt there were hundreds of dogs sacrificed upon other series of experiments, but now I am only referring to one set beginning as I say on the 14th of December, 1878. There were in this set 31 experiments, but no doubt many more than 31 dogs were sacrificed. All were performed on dogs, and the nature of them was this: The dogs were starved for many hours. They were then fastened down; the abdomen was cut open; the bile duct was dissected out and cut; a glass tube was tied into the bile duct and brought outside the body. The duct leading to the gall-bladder was then closed by a clamp and various drugs was placed into the intestines at its upper part. The result of these experiments was simply nothing at all—I mean it led to no increase of knowledge whatever, and no one can be astonished at that, because these wretched beasts were placed in such circumstances—their condition was so abnormal—that the ordinary and universally recognised effect of well-known drugs was not produced. These experiments were performed without anesthetics—the animals were experimented upon under the influence of a drug called curari."—*Mr. Reid's Speech in the House of Commons, April 4th, 1883.*

"In your judgment and your own experience, are operations of that description upon a dog to be taken as being evidence of what the effect would be on the human being?—Certainly not, but merely as suggesting what the action would be; that is all. The experi-

ment must also be tried upon man before a conclusion can be drawn."
—*Evid. Roy. Com. Q.* 2966.

"What is the rule by which you guide yourself in determining whether animals shall be rendered insensible to pain or not?—When the mode of rendering them insensible to pain would interfere with the due result being obtained from the experiment, we do not so render them. Is that any large proportion of the experiments?—I should say a considerable proportion. Would it be more than half the experiments?—I should have a difficulty in saying how many, but I should think about half the experiments that I have done."
—*Ibid.*, 2841-3.

"Where did you study physiology yourself?—I studied it in Berlin chiefly. I had to go there to have a whole course of experiments performed for my special benefit; there was a great expenditure of time and teaching power, and also of animals, to teach me alone."—*Ibid.*, Q. 2867.

Sanderson, John Burdon, Physiol. Lab. Univ. Mus. Oxford, M.D. Edin., 1851; F.R.C.P. Lond., 1863, M. (Exam.) 1855 (Edin.); LL.D., F.R.S.; Fell. Roy. Med. Chir. Soc.; late Jodrell Prof. of Physiol., Univ. College; Waynflete Prof. of Physiol., Oxford; late Phys. Consump. Hosp. Brompton; Asst. Phys. and Lect. Middlesex Hosp.; Mem. Assoc. for Advancement of Medicine by Research.

Author of Various Papers and Reports. Editor of "Handbook for the Physiological Laboratory," 1872.

Held a License for Vivisection at the Brown Institution, and University College, London; also unrestricted as to place in 1878-79-80-81-82-83. Certificates for Illustrations of Lectures and for Experiments without Anæsthetics in 1878 and 1882. Certificates for Illustrations of Lectures in 1879-80-81-83.

"For this purpose (to produce asphyxia) a cannula must be fixed air tight in the trachea. . . . The phenomena as they present themselves in the dog, may be enumerated as follows:—*First minute*—Excessive respiratory movements. . . . Towards the close of the first minute the animal becomes convulsed. . . . *Second minute*. . . . The iris is now dilated to a rim, the eye does not close when the cornea is touched, nor does the pupil react to light; all reflex action to stimuli has ceased. . . . *Third and fourth minutes*.—As death approaches, the thoracic and abdominal movements, which are entirely inspiratory, become slower and slower as well as shallower. . . . In these spasms which accompany the final gasps of an asphyxiated animal, the head is thrown back, the trunk straightened or arched backwards, and the limbs are extended, while the mouth gapes and the nostrils dilate."—*Handbook for the Physiological Laboratory*, p. 320.

"In a curarised rabbit, in which artificial respiration is maintained in the usual way, an incision is made in the middle line, extending from the upper third of the sternum to the upper end of the trachea. The external jugular vein of one side is then brought into view, tied in two places, and divided between ligatures. . . . Both ganglia having been thus prepared with as little loss of time as possible, the sympathetic and vagus nerves are divided, and the medulla oblongata (spinal cord) is then divided."—*Ibid.*, p. 278.

"Fix the point of the chisel in the middle line of the skull (of a rabbit) just behind the protuberance, and bore through the bone,

moving the handle of the instrument from side to side in order to assist its passage, but not pressing with too great force. When the skull has been penetrated, push the chisel downwards and forwards through the cerebellum. . . . In half-an-hour or an hour afterwards test for sugar."—*Ibid*, p. 515.

"The bile in guinea-pigs is secreted in very large quantities. . . . When the bile-duct is tied the guinea-pigs die in less than twenty-four hours; but when it is not tied they will live for a week."—*Ibid*, p. 505.

Savory, Wm. Scovell, 66, Brook Street, W. M.B. Lond. (Univ. Med. Schl.), 1848; F.R.C.S. Eng. (Exam.) 1852; M. 1847; F.R.S.; Mem. Comt. Exam. Roy. Coll. Surg. Eng.; Surg. and Lect. on Surg. St. Bath. Hosp.; Exam. Surg. Univ. Coll.; Surg. Christ's Hosp.; late Prof. Comp. Anat. and Physiol. R.C.S. Eng.

Author of "Life and Death;" "Essays on Pyæmia, &c.;" St. Bart. Hosp. Reps. and Various Essays in Philos. and Med. and Chir. Trans. and Med. Journ.

Made experiments on dogs—to study the relative temperature of arterial and venous blood.—*Lancet*, Vol. I., 1857, pp. 371-398.

Schäfer, Edw. Albert, University College, Gower Street, W.C. M.R.C.S. Eng., 1874; (Univ. Coll.); F.R.S.; Jodrell Prof. of Physiol. Univ. Coll.; formerly Fuller Prof. of Physiol. Roy. Inst.

Author of "A Course of Practical Histology," London, 1883; Contrib. Proc. Roy. Soc. and Journ. Anat. and Phys., &c. &c.; Editor of Microscopic Part of Quain's Anatomy, 8th Edition.

Held a License for Vivisection at University College, London, Physiological Theatre, Microscope Room with Ante Room, the Jodrell Laboratory, Physiological Laboratory, and Curator's Rooms in 1878-79-80-81-82-83. Certificates for Illustrations of Lectures and Dispensing with obligation to kill, 1878-79-80-81-82-83.

"Then may I take it there are a great number of experiments which, supposing a frog to be a sensitive animal, must cause a vast deal of pain, which are not done under chloroform?—There is no doubt of it. And there is no precaution taken to diminish pain, if it suffers pain?—I think I may say no special precaution."—*Evid. Roy. Com.*, Q. 3,801-2.

Schiff, Moritz. B. at Frankfort, O.M., 1823; Studied at Univs. Heidelberg, Göttingen, and Berlin; Laureate in Med., Gott., 1844; Pupil of Majendie and Longet; formerly Curator of Ornithological Museum, Frankfort; Prof. of Ornith. and Path. Anat., Bern, 1855; Prof. Physiol., Florence, 1872; Prof. Physiol. at Geneva, 1876.

Author of "De vi motoria bascos encephali," Frankfort, 1845; "Untersuchungen zur Physiologie des Nervensystems," 1854; "Nerven und Muskel-Physiologie," Lahr, 1838; "Ueber Zuckerbildung in der Leber," Würzburg, 1859; "Sul sistema nervoso encefalico," Florence, 1865; "Sur la Physiologie de la Digestion," Turin, 1867; "Sulla Misura della Sensazione," Florence, 1869; "De l'Inflammation et de la Circulation," Paris, 1873; "La pupille comme esthesiomètre," Paris, 1875, etc.

"In Professor Schiff's work, almost every lecture is accompanied by the sacrifice of some animal; 700 a year, it is stated, thus perish (1843). Calls attention to a discrepancy between two statements of Professor Schiff: one stating that the dogs made no noise because they were not in pain; the other stating that their nerves of vocalisation had been cut "pour les empêcher . . . de discréditer ainsi les études physiologiques auprès des habitants du quartier" (1287).—*Digest Ev. Roy. Com.*, p. 11.

"A number of rabbits were deprived of food until they ate dead frogs thrown into their hutch. The object of this experiment was to show that herbivorous animals could live on animal food (See Schiff, *Physiologie de la Digestive*, Vol. I., p. 67). What use this information may be put to I leave to the judgment of unbiassed minds to determine. I know that the rabbits suffered very much before they were induced to eat the dead frogs."—*Evid. Roy. Com.*, Q. 4,888, p. 244.

"After the thousands of experiments made by these gentlemen, by which they are enabled to contradict each other, and after all this fiendish massacre, the latest writer on the nervous system, Moritz Schiff, a man who has gained some notoriety as a vivisector, concludes, from numberless other experiments he has made, that the functions of the cerebellum are altogether unknown."—*Fleming's Essay*, p. 33.

Schmidt, Albrecht. Prof. Physiol. Med. Fac. Univ. Dorpat.

Scott, John Alfred, 25, Idrome Terrace, Blackrock, Co. Dublin. L.K.Q.C.P. Irel. and L.M., 1882; L.B.C.S.I., 1881; L.M. Rot. Hosp., Dub., 1880; (Ledw. and Carm. Schs. and Mercer's and Adelaide Hosps., Dub.); Fell. Acad. Med. Irel.; Mem. Photog. Soc. Irel.; Lect. on Anat. Physiol. Carm. Coll. of Med. Dub.

Held a License for Vivisection at Physiological Lecture Rooms and Laboratory, Carmichael College, Dublin, in 1882 and 1883. Certificate for Illustrations of Lectures in 1882 and 1883. No Experiments returned, 1882.

Sedgwick, Wm. T. Ph.B.; Fellow of the Johns Hopkins University, Baltimore, U.S.A.

Contrib. "The influence of quinine upon the reflex excitability of the spinal cord."—"Journ. of Physiol.," Vol. III., p. 22.

Experiments on frogs.

Senator, Hermann, 7, Bahnhofstrasse, Berlin. B. Gnesen, 1834; M.D., Berlin, 1858; Pupil of Johannes Muller, 1875; Direct. Inner Dept. of Augusta Hosp.; and Prof. extraord. Med. Faculty, Berlin.

Co-editor (with Prof. H. Kronecker) of "Centralblatt für die medicinischen Wissenschaften."

Sertoli, Enrico, Prof. Univ., Milan. Scuola Sup. di Veterinaria.

Severini, Luigi, Perugia. Prof. Università Libera, Corso di Zoogiatrice.

Sewall, Henry. B. Sc.; Ph. D.; Prof. of Physiol. Univ. of Michigan, Ann Arbor, U.S.A.; Assoc. in Biol. Johns Hopkins Univ., Baltimore.

Contrib. "Experiments upon the ears of fishes with reference to the function of equilibrium."—"Journ. of Physiol.," Vol. IV., p. 339, &c.

"The experiments to be described were carried on by means of the facilities offered at the Marine Laboratory of the Johns Hopkins University during the summer of 1881, at Beaufort, N.C., and again in 1883, on the Chesapeake Bay. . . . Records were made of experiments performed upon more than ninety individuals (sharks and skate) The experiments were performed under unusually favourable anatomical conditions, but it must be confessed that the results obtained are far from forming a solution of the problem investigated."—*Journ of Physiol.*, Vol. IV., pp. 338, etc.

Sharpey, William. B. at Arbroath, Forfarshire, 1802; d. 1881. Studied at Edinburgh and Paris; M.D. Edinburgh, 1823; LL.D. Edin.; F.R.C.S. Edin., 1830; F.R.S., F.R.S.E.; a Trustee Hunt. Mus.; Mem. Gen. Med. Council; Mem. Senate Univ. Lond.; Emerit. Prof. Anat. and Physiol. Univ. of London, 1836; F.R.S., 1839.

"Has performed experiments on living animals, and sometimes exhibited them (389-91), and considers such experiments absolutely necessary for the progress of physiology (393), and that scientific investigation by competent persons is important for the development of medical and surgical improvement (398-401)."—*Digest. Ev. Roy. Com.*, p. 4.

"The chief use of employing curari is to render the animal quite still; that is the great purpose of it. What Mr. Hutton says is quite true, that it is not generally recognised as an anæsthetic, and, therefore, not used as an anæsthetic.—Then it is a contrivance to save to the operator the trouble which the manifestation of pain by the animal might occasion him? It facilitates the operation at any rate.—*Evid. Roy. Com.*, Q. 462-3.

Sibson, Francis, 59, Brook Street, W. M.D. Lond. 1848; M.D. Dub. (Hon.) 1867; F.R.C.P. Lond., 1853; Hon. D.C.L. Durh.; F.R.S.; Mem. Senate (formerly Exam. in Med.) Univ. Lond.; Vice-Pres. (late Pres. Council) Brit. Med. Assoc.; late Sen. Phys. and Lect. on Clin. Med. St. Mary's Hosp.; Goulst. Lect. B.C.P. Lond., 1853; Croon. Lect., 1870.

Author of "Medical Anatomy;" "The Causes which excite Respiration in Health and Disease;" *Physiol. Address*, 1851, etc., etc.

Sieveking, Ed. Henry, 17, Manchester Square, W. M.D. Edin., 1841; F.R.C.P. Lond., 1852 (Univ. Coll. and Edin.); Pres. Harv. Soc., 1861; Vice-Pres. Roy. Med. and Chir. Soc.; *Phys. Extraord.* to H.M. the Queen; *Phys. in Ord.* to H.R.H. the Prince of Wales; *Phys.* to St. Mary's Hosp.; *Phys. Hosp.* for Paralysis and Epilepsy, etc.

Formerly Editor "*Medico-Chirurgical Review*;" Author of "*Manual of Pathological Anatomy*" (with Dr. H. Jones), 1854, etc.

Sihler, Christian, M.D., Fellow of Johns Hopkins University, Baltimore, U.S.A.

Author of "On the so-called Heat Dyspnoea," "Journ. of Physiol.," Vol. II, p. 192.

Placed some dogs with cervical cord cut, in a heated chamber to test experiments made previously by Goldstein.

Silvestri, Luigi, Perugia. Prof. Università Libera Corso di Zootecnica.

Solera, Luigi. Prof. Catania University.

Soloweitschyk, Isaac, St. Petersburg.

Made experiments on the action of the different combinations of Antimony in the Institute of Experimental Pharmacology, Strasburg. Exper. VIII., on a cat weighing about $7\frac{1}{2}$ lbs. The nervi vagi cut, the animal curarised, and artificial respiration established, electrodes inserted into the spinal marrow and an electric current sent through the nerves.—*Archiv. für Exper. Pathol.*, 12, 5, 6.

Soltmann, O. Prof. Med. Fac. Univ. Breslau.

"With reference to the published works of Fritsch and Hitzig on the motor centres of the cortex, and also (while I am engaged in the same studies) concerning the experiments of Hermann on electrical stimulation in Pflüger's Archives, Vol. X., I feel called upon to make the following communication:—(1) In newly-born dogs no muscular movements were observed during electrical stimulation of the cortex cerebri; (2) These movements were only observed some days (9-11 days) after birth; (3) The extent and form of the motor centres of the cortex vary; in young animals they differ from those of fully grown animals. The necessary subjects for further experimentation (pregnant bitches and young dogs of all ages) are difficult to obtain so that the experiments only proceed slowly. Breslau, 10 March, 1875."—*Centralbl. f. d. Med. Wiss.*, 1875, p. 210.

Stefani, Aristide, Ferrara. Università Libera, Corso di Zootecnica.

Author (jointly with Weiss) of "Ricerche anatomiche intorno al cervello di Comlombi sani ed operati nei Canali Semicircolari," Com. to Acad. Ferrara, 24 Nov., 1877.

Sternberg, George M. M.D., Surgeon and Major, U.S.A.

Contrib. "Induced Septicæmia in the Rabbit," Amer. Journ. of Med. Sciences, July, 1882; "Experiments to determine the germicide value of certain Therapeutic Agents," *Ibid.*, April, 1883.

"The object of the present paper is to compare the results obtained in some recently reported experiments upon rabbits (Report to the Scientific Grants Committee of the British Medical Association, by Peter Murray Braidwood, M.D., F.R.M.S., and Francis Vacher, F.R.C.S., Ed., *British Med. Journ.*, Nos. 1,100 and 1,101, 1882) with the writer's experiments made last year, under the auspices of the National Board of Health (a fatal form of septicæmia in the rabbit produced by the subcutaneous injection of human saliva).—*National Board of Health Bulletin*, April 30, 1881.

"I have demonstrated by repeated experiments that my saliva in doses of 1.25 c.c. to 1.75 c.c. injected into the subcutaneous connective tissue of a rabbit, *infallibly produces death*, usually within forty-eight hours." . . . "The saliva of four students, residents of Baltimore gave negative results; eleven rabbits injected with the saliva of six individuals in Philadelphia gave eight deaths and three negative results; but in the fatal cases a less degree of virulence was shown in six cases by a more prolonged period between the date of injection and the date of death."—*Amer. Journ. of Med. Sciences*, July, 1882, pp. 71, &c.

Stevenson, Thomas, Guy's Hosp., S.E., and 45, Gresham Road, S.W. M.D. Lond., 1864; F.R.C.P. Lond., 1871; M. 1864; M.B.C.S. Eng., 1862 (Guy's); Lect. on Chem. and Med. Jurisp. Guy's Hosp.; Analyst Surrey, Bedfordsh., St. Pancras, Shoreditch, etc.; Exam. in Forensic Med. Univ. Lond.

Joint Author "On the Application of Physiological tests for certain Organic Poisons, especially Digitaline;" Proc. Roy. Soc. 1865, and various Papers in Guy's Hosp. Reps., etc.

Held a License for Vivisection at Guy's Hospital Museum Theatre and Lecture Room in 1881-82-83. Certificate for Experiments without Anæsthetics in 1881-82-83. No Experiments returned in 1883.

Stirling, William, Marischal College, Aberdeen. B. Sc. Edin. (1st Class Honours), 1870; D. Sc. (1st Class Honours in Physiol.) 1872; M.B. and C.M. (1st Class Honours), 1872; M.D. (Gold Medallist), 1875; (Edin., Leipsig, Berlin and Paris); Regius Prof. of Insts. of Med. Univ. Aberdeen.

Author of "Text Book of Practical Histology" (plates), 1881; "Outlines of Physiological Chemistry," 1881; "Effects of Division of the Sympathetic Nerve in the Neck of Young Animals," "Journ. Anat. and Physiol.," etc., etc.

Held a License for Vivisection at University Aberdeen Physiological Department in 1878-79-80-81-82-83; Certificates for Illustrations of Lectures in 1878-79-80-81-82-83. No Experiments returned in 1881.

Strauss, J., 10, Rue Madame, Paris. M.D.; Agrégé at Med. Fac.; Physician at the Tenon Hospital.

Author of "Des lésions rénales dans leur rapport avec l'hyperthrophie cardiaque," Arch. Gén. de Méd., Jan., 1882.

Stroganow, N., St. Petersburg.

Author of "Beiträge zur Kenntniss des Oxydations processes im normalen und Erstickungs-blute."—Pfügers Archiv, Vol. XII., p. 18.

Made experiments in the Laboratory of Prof. Hoppe-Seyler in Strassburg.

Dogs asphyxiated with an apparatus constructed by direction of Prof. Hoppe-Seyler after the model of that of Regnault and Reiset.

Studiati, Cesare. Prof. Pisa University.

Suchard (Prof.), 9, Avenue de l'Observatoire, Paris. M.D.; Prof. of Gen. Anat., College of France.

Talma G. Prof. Utrecht University.

Author of: "Ueber die Folgen Arterienverschlusses in den verschiedenen Organen," *Centralbl. f. d. Med. Wissenschaften*, No. 46 (1879), p. 817; "Zur Genese der Herztöne," *Plüger's Arch.*, Vol. XVIII. (1880), p. 275; "Nog. eens over hart en arterietonen," *Nederl. Tijdschr. v. Geneesk.*, 1880, p. 661; "Beiträge zur Kenntniss des Einflusses der Respiration auf die Circulation des Blutes," *Plüger's Arch.*, Vol. XXIX. (1882), p. 311.

Experiments on dogs and rabbits to study the effect of respiration on the circulation of the blood.

Tamburini (Sig.). Prof. at Institut. Psychiatrique of Reggio.

Joint author (with Seppilli) of "Contribuzione allo studio sperimentale del ipnotismo;" "Rivist. sper. di Psichiat.," 1882, p. 268; and "Arch. ital. de Biologie," Vol. II., 1882.

Experiments on hypnotism in the human subject.

Teissier, Junr. (Prof.). 16, Quai Tilsitt, Lyons. Prof. of Clin. Med., Med. Fac. Univ. Lyons.

"Made a series of experiments at the College de France to prove the dangers attending the introduction of the negative pole of the battery into the aneurismal sac (M. Ciniselli's method). These researches were made on dogs."—*Gaz. Med. de Paris*, 1878, p. 129.

Thin, George, 22, Queen Anne Street, Cavendish Square, W. M.D., St. And., 1860; L.R.C.S. Edin., 1858 (Edin.), Contrib. on Histological, Pathological, and Dermatological subjects in various Journs. and Trans.

Held a License for Vivisection at University College, London; the New Physiological Theatre and the Rooms comprised in the Physiological Laboratory, together with the Curator's Room, in 1883. Certificate Dispensing with obligation to kill same year.

Tiegel, E. Asst. at Physiol. Inst., Strasburg, and Private Prof.

Author of "Notizen über Schlangenblut," *Pflüger's Arch.*, Vol. XXIII. (1880), p. 278.

Tigerstedt, R. A. A. Prof. Stockholm University.

Author of "Studien ueber mechanische Nervenreizung," 1 Abth. Helsingfors, 1880; "Die durch einen Konstanten Strom in den Nerven hervorgerufenen Veränderungen der Erregbarkeit mittels mechanischer Reizung untersucht."—*Mittheil vom physiol. Laborat., Stockholm, Bk. I.*, 1882, etc.

Tommasi-Crudeli, Corrado. B. at Piere, Santo Stefano, 1834; Prof. extraord. of Path. Hist. at Ist. di Studii Superiori, Florence, 1863; Prof. of Path. Anat. Univ. of Palermo, 1865; Founded Physiol. and Pathol. Inst. at Rome, 1870.

Topinard (Mons.). 103, Rue de Rennes, Paris. M.D.; Prof. at the Institute of Anthropology.

Toussaint, H. Prof. at the Veterinary School, Toulouse; Prof. Physiol. Fac. Sci., Toulouse, 1880.

Author of "Identité de la septicémie expérimentale aigüe et du choléra des poules."—*Compt. Rend.*, Vol. XCI. (1880), p. 301; "Note contenue dans un pli cacheté et relative à un procédé pour la vaccination du mouton et du jeune chien."—*Ibid.*, p. 303.

Traube, Ludwig. B. at Ratibon, 1818; d. at Berlin, 1876. Geheimrath.

Trojanow (Dr.), St. Petersburg.

Author of "The influence of extended scalds on the animal organism" (In Russian), St. Petersburg, 1882.

Truman, Edgar Becket, 31, Derby Road, Nottingham. M.D. St. And., 1861; M.R.C.S. Eng. and L.S.A., 1860 (Guys); Sen. Exhib. and Gold Medallist in Med., Guy's; Prizem. Phys. Soc.; F.C.S.; Pub. Analyst, Nottingh. Boro' and Co.

Contrib. Pop. Sci. Rev., 1863, &c.

Held a License for Vivisection at 31, Derby Road, Nottingham, in 1882 and 1883. Certificates for Experiments without Anæsthetics, 1882 and 1883. No Experiments returned.

Turner, George, High Street, Hoddesdon, Herts. L.R.C.P. Lond., 1872; M.R.C.S. Eng., 1872; Sanit. Sci. Cert., Cambridge, 1875; (Guy's and Montpellier); Prizem. Guy's Hosp. 1869, 1871; F.C.S.; late Med. Off. Health and Analyst, Portsmouth Boro'; Sanit. Med. Off. Portsmouth; Res. Med. Off. Lond. Fever Hosp. and Chef de Clinique intérimaire, Hôpital St. Eloi, Montpellier.

Held a License for Vivisection at Portsmouth Borough Laboratory in 1878 and 1879. No Experiments returned.

Vacher, Francis, 36, Hamilton Square, and 49, Shrewsbury Road, Birkenhead. F.R.C.S. Edin., 1878; L.R.C.P. Edin., 1867 (Edin.); Hon. Sec. N. Western Ass.; Med. Off. Health; House Surg. Roy. Matern. Hosp. Edin. Contrib. Liverp. and Manch. Med. Surg. Reps. etc., etc.

*Held a License for Vivisection at *35, Park Road, South Birkenhead in 1878. Certificates dispensing with obligations to kill, and for testing previous discoveries. No Experiments returned.*

Valentin, Gabriel Gustav. B. at Breslau, 1810; d. at Geneva, 1883. M.D., Breslau, 1832; Prof. Physiol., Univ. of Berne, 1836 to 1881.

Author of "De functionibus nervorum cerebralium et nervi sympathici," Berne, 1839; "Grundriss der Physiologie des Menschen," Brunswick, 1846; "Beiträge zur Anatomie und Physiologie des nerven u. des Muskelsystems," Leipzig, 1863; "Versuch einer physiologischen Pathologie der Nerven," Leipzig, 1864; "Versuch einer physiologischen Pathologie des Herzens und der Blutgefäße," Leipzig u. Heidelberg, 1866, etc.

Made experiments with strychnine on frogs.—Arch. f. exper. Pathologie, p. 337.

Vallon (Mons.), No. 1, Rue Cabanio, Paris. Phys. Hosp. for Mental Disease.

Valmont (Prof.), 90, Rue de la Boétie, Paris. Med. Fac.; Prof. of Pharmacol.

* This place has been withdrawn from the Register at the request of Mr. Vacher.

Veltà (Prof.), Bologna University.

Verderi (Prof.), Parma University.

Vierordt, K. von. Prof. of Physiol. Med. Fac., Tübingen University.

Author of "Physiologie des Athmens," Karlsruhe, 1845; "Die Lehre vom Arterienpuls in gesunden und kranken Zuständen," 1855; "Grundriss der Physiologie des Menschen," Tübingen, 1861; "Ueber Stehen und Gehen," *Ibid.*, 1865; "Die Einheit der Wissenschaft," *Ibid.*, 1865; "Der Zeitsinn nach Versuchen," *Ibid.*, 1868.

Vincent, E. M.D.; Prof. Med. Fac., Lyons; Chief Surg. La Charité, Lyons.

Contrib. "Plaies pénétrantes intrapéritonéales de la Vessie;" "Revue de Chirurgie," Vol. I., 1881, p. 556.

Made 29 experiments on dogs. Exp. VII.: Abdominal walls of dog cut open with scissors, bladder drawn out, shot at with revolver. Bladder sewn together; the wound healed, the dog was again used for an experiment on the ossification of the marrow, and at the end of a month killed.

Vintschgau, M. von. Prof. of Exper. Physiol. Med. Fac. Innsbruck University.

Contrib. to "Handbuch der Physiologie," edited by Prof. Hermann of Zurich, Leipzig, 1879.

Author of "Beiträge zur Physiologie des Geschmacksinnes," Pfüger's Archiv, Vols. XIX and XX. (1879); "Die Physiologische Reactionzeit und der Ortsinn der Haut," *Ibid.*, Vol. XXII. (1880); "Untersuchungen ueber die Frage ob die Geschwindigkeit der Fortpflanzung der Nervenenerregung von Reizstärke abhängig ist," *Ibid.*, Vol. XXX. (1882).

Virchow, Rudolf. Born at Schivelbein, Pomerania, 1821. M.D. (Berlin) 1843; Prosect. Univ. Berlin, 1847; Public Prof. in Ordinary of Path. Anat., Gen. Path. and Therapeutics Univ. Berlin; Director Path. Inst.; Hon. Mem. Roy. Med. Soc. London, 1850; Corr. Mem. French Acad. of Med., 1859.

Author of "Gesammelte Abhandlungen zur Wissenschaftlichen Medicin," Frankfurt, 1856, "Die cellular Pathologie in ihrer Begründung auf physiologische und pathologische Gewebelehre," Berlin, 1858; Ueber die Erziehung des Weibes für seinen Beruf," Berlin, 1865; "Menschen und Affenschädel," 1866; "Die Aufgabe der Naturwissenschaften in den neuen nationalen Leben Deutschlands," Berlin, 1871; "Die Freiheit der Wissenschaft im modernen Staat," Berlin, 1877, &c., &c. Editor of "Virchow's Archiv."

Vogt, Carl. B. at Giessen, 1817; Studied Giessen and Bern; M.D. 1839; Found. Scient. Soc. of German Doctors in Paris; Prof. Univ. Giessen, 1847; Prof. Comp. Anat. Med. Fac. Univ. Geneva, 1852.

Author of "Im Gebirge und auf den Gletschern," Soleure, 1843; "Lehrbuch der Geologie und Petrefactenkunde, Brunswick," 1846; "Physiologische Briefe," Stuttgart, 1845-46; *Ibid.*, Paris, 1875; "Ocean und Mittelmeer," Frankfurt, 1848; "Untersuchungen ueber

Thierstaaten," 1851; "Bilder aus dem Thierleben," 1852; "Kocherglaube und Wissenschaft," 1855; "Vorlesungen ueber den Menschen," 1864; "Vorlesungen ueber nützliche und schädliche Thiere," 1856; "Die Mikrocephalen oder Affenmenschen," 1866, &c.

Voit, Carl von. B. at Amborga, Bavaria, 1831. Studied Med. at Monaco and Wurzburg, and in the Labs. of Pettenkofer, Wächter, and Bischoff. Prof. of Med. Univ. Monaco, 1863; Prof. Physiol. Med. Fac., Univ. of Munich, 1883.

Joint author with Prof. Bischoff of "Die Gesetze der Ernährung des Fleischfressers," Leipzig and Heidelberg, 1860; "Untersuchungen ueber den Einfluss des Kochsalzes, des Kaffees und der Muskelbewegungen auf den Stoffwechsel," Munich, 1860; Editor of "Zeitschrift fuer Biologie," Munich and Leipzig. Contrib. to "Handbuch der Physiologie," edited by L. Herrmann of Zurich, Leipzig, 1879.

Vulpian, A., 24, Rue Soufflot, Paris. M.D. Paris, 1854; Prof. Path. Anat. Med. Faculty, 1867; Prof. Comp. and Exper. Path., 1872; Mem. Acad. of Sciences, 1876.

Author of "Leçon sur la Physiologie générale et comparée du système nerveux," 1866; "Leçons sur l'appareil vaso-moteur," 1874; "Maladies du système nerveux," 1879.

"M. Vulpian has recently made a large number of experiments to ascertain the degree and character of the mechanical excitability of the grey cortex of the brain. In mammals, dog, cat, and rabbit, in the normal condition, he could never produce in this way the slightest movement either in the limbs of the opposite side, or in those of the same side. The mechanical stimulation was produced by rubbing the surface of the cortex with a small sponge, or a fragment of amadou, or with the points of dissection forceps. . . . If therefore movement resulted from such stimulation in the experiments of Couty, the effect must have been purely accidental or the consequence of some experimental error. The results were also negative when Vulpian repeated the experiments after having produced inflammation of the surface of the sigmoid gyrus by tincture of cantharides, by essence of mustard or by nicotine."—*Lancet*, Sept. 16, 1882, p. 453.

"I have made the section of the facial nerve at its entrance into the internal auditory meatus, in several dogs, . . . in other dogs I succeeded in dividing the facial nerve near its real origin, below the floor of the fourth ventricle. The results were absolutely identical. . . . I had to undertake other experiments to find out what would be the effect of the inter cranial section of the trigeminal nerve on the chorda tympani. These experiments were made on rabbits. Although numerous, they gave but few significant results, because several of the animals did not live long enough after the operation for the divided nerves to show any very decided changes; or else because in several of them, the section of the nerve was far from being complete."—*Acad. des Sciences*, April, 1878.—*Archives Gen. de Méd.*, 1878, p. 751.

Wagner, Rudolf. B. at Bayreuth, 1805. Geheimrath and Prof. Physiol. and Zool., Univ. of Göttingen; Mem. Roy. Soc. of Sciences, Gott.

Walker, James. 214, Union Street, Aberdeen. M.B. Aberd. and C.M. (Highest Honours), 1873 (Univ. Aberd.).

Held a License for Vivisection at University Aberdeen Physiological Laboratory and Materia Medica Department, Marischal College, in 1881. Certificate for Experiments without Anæsthetics in 1881. No Experiments returned.

Walton, George L. M.D. Boston, U.S.A. Contrib. of "Reflex movements of the frog under the influence of strychnia," "Journ. of Physiol.," Vol. III., p. 308; "The physiological action of Methylcyanethine," *Ibid.*, p. 349.

Experiments on frogs, dogs, and rabbits, made in the Leipsig Physiol. Laboratory.

Waters, William Horscroft, B.A. Camb.

Held a License for Vivisection at Owen's College, Manchester, Physiological Laboratory in 1888, also at University Cambridge Physiological Laboratory New Museum in 1879-80-81-82-83. Certificates for Illustrations of Lectures in 1880-81-82-83. No Experiments returned in 1882 and 1883.

Weber, Arthur, 33, Boulevard des Batignolles, Paris. Prof. Gen. Anat. College of France.

Weir-Mitchell, S. M.D.; Mem. Nat. Acad. of Sciences, U.S.A.

Weisman (Dr.), Prof. of Physiol. and Prosector of Univ., Freiburg in Baden.

Wells, Sir T. Spencer, Bart., 3, Upper Grosvenor Street, W. F.R.C.S. Eng. (Hon.), 1844; M. 1841; F.K.Q.C.P. Irel. (Hon.), 1867; Dub. and St. Thos.'s; Mem. Counc. (Vice-Pres. 1880); R.C.S. Eng.; Fell. Roy. Med. Chir. Soc.; Mem. Roy. Inst., Path. Soc.; Imp. Soc. Surg. Paris; Soc. of Med. Paris, and Soc. of Phys. Sweden; Hon. Mem. several foreign learned Societies; Surg. to Queen's Household; Cons. Surg. Samarit. Hosp. for Women and Children; late Prof. of Surg. and Path. R.C.S. Eng.; formerly Surg. Roy. Navy.

Author of "Diseases of the Ovaries, their Diagnosis and Treatment," 1865 and 1872; "Ten Series of 100 cases of Ovariectomy;" Med. Chir. Trans. 1859-80, and numerous contributions to Medical Papers.

"If we could hope in diseased women for the same series of changes as have been observed in healthy dogs and rabbits, we might agree more completely with the conclusions of the German experimenters. But it is one thing to remove a piece of a uterine horn, or a healthy ovary, or a bit of omentum or mesentery, from a dog or a rabbit, and a very different thing to remove a large uterine or ovarian tumour from a woman whose general health has been more or less affected by the growth of the tumour."—*Diseases of the Ovaries*, London, 1872, p. 372.

"I made experiments upon animals for which I have been vilified, but for which I do not reproach myself. . . . They corroborate what was known before, that abdominal wounds well adjusted unite readily. This was not what I wanted. They proved more, and were the visible standing evidence which I did want—that, though the other tissues might be brought together, if the cut edges

of the peritoneum were left free, they retracted, direct union did not take place, and secondary evil consequences resulted. . . . Without this convincing demonstration in my hands, I might have gone on for years, bowing to precepts and oblivious of principles, sometimes taking up the peritoneum and sometimes leaving it loose, with perplexity to myself and danger to my patients."—*Ovarian and Uterine Tumours*, London, 1882, pp. 197-98.

"Fifteen years after my first operation (in 1842), T. S. Wells came to Manchester to be present at one of my operations, and made many inquiries, amongst which—'Did I include the peritoneum in my interrupted sutures?' I replied, 'Certainly;' and gave as my reason, that in two cases where the suture had not included the peritoneum hernial protusions had followed. I also added, that peritonitis could only be set up *once*, whether the sutures included the peritoneum or not. I was for some time after in correspondence with Mr. Wells, but never heard of vivisection in connection with ovariectomy, nor can I perceive any advantage that ovariectomy has received from such experiments. All my operations from first to last have shown the same average amount of success—about 75 per cent. I have never practised nor yet countenanced vivisection. I have given up operating after 400 cases and about 100 deaths."—*Letter of Dr. Clay, dated April 6th, 1880*.

"The whole progress of abdominal surgery dates from the first successful case of ovariectomy performed by Robert Houston in 1701. Failing to see the lesson taught by this, and led astray by vivisection, no further success was achieved till 1809, by Ephraim McDowell, and it was not till 1867 that any substantial gain was made. Disregarding all the conclusions of experiment, Baker Brown showed us how to bring our mortality of ovariectomy down to 10 per cent., and again, in 1876, Keith proved that it might be still further reduced. The methods of this reduction were such as only experience on human patients could indicate; experiments on animals could and did teach nothing, for operations have been performed on thousands of animals every year for centuries, and nothing whatever has been learnt from this wholesale vivisection."—Lawson Tait, F.R.C.S., "*Uselessness of Vivisection*," p. 27.

Wertheim, G. Prof. Med. Fac. Vienna University.

Roasted 30 living dogs.—*Annual Report of Rudolph Institute*, Vienna, 1867, pp. 172, 183.

Wilischanin, Paul. M.D., St. Petersburg.

Made experiments in the Clinical Lab. of Prof. Botkin.

Produced fever in dogs and rabbits by injecting decomposed defibrinised blood, to try the effect of warm water injections.—*Centralbl. f. d. Med. Wiss.*, Sept. 22, 1883, No. 38.

Williams, C. J. B., 49, Upper Brook Street, W. M.D. Edin., 1824; F.R.C.P. Lond. 1840; (Edin. Paris, and St. Georg.), F.R.S.; Pres. Roy. Med. and Chir. Soc. Lond.; Phys. Extr. to H.M. the Queen; formerly Prof. Med. and Clin. Med. Univ. Coll.; Pres. (1st) Path. and New Syd. Soc.

Author of "*Principles of Medicine*," 1856; *Several Courses of Lectures on Physiol. and Clin. Med.*; "*Medical Gazette*," 1855-45, &c., &c.

Williams, Dawson, 4, Oxford and Cambridge Mansions, Marylebone Road, N.W. M.D. (worthy of gold medal), 1881. M.B. Lond. (Gold Medal in Med.) and B.S. 1879; M.R.C.S. Eng. (Univ. Coll.)

Held a License for Vivisection at University College, London, New Physiological Theatre and Laboratory and Curator's Rooms in 1882 and 1883. Certificate dispensing with obligation to kill, 1882 and 1883. No experiments returned in 1882.

Wirtz, S. H. Prof. Utrecht University.

Wittich, W. von. Prof. of Physiol. Med. Fac. Königsberg University.

Contributor to "Handbuch der Physiologie," edited by Prof. Hermann, of Zurich, Leipsig, 1879.

Wolfenden, Richard Norris, 64, Welbeck Street, Cavendish Square. B.A. Camb. (Honours in Nat. Sci.) 1876; M.B. 1880 (Camb., St. Barthol. and Char. Cross); Lect. on Pract. Physiol. Char. Cross Hosp.; late House Phys. Lond. Hosp.

Author of "Physiological Chemistry for the Laboratory," 1880; Contrib. "Med. Times and Gaz.," etc., etc.

Held a License for Vivisection at Charing Cross Hospital Medical School, No. 62 and 63, Chandos Street, in 1881 and 1882. Certificate for Illustrations of Lectures in 1881 and 1882. No experiments returned in 1882.

Wooldridge, Leonard Charles, 12, Querstrasse, Leipsig, Germany. M.D., M.R.C.S. Eng., 1879; George Henry Lewes Student.

Author of "Zur Gerinnung des Blutes," Du Bois Reymond's Archiv, 1883, p. 389 (Physiol. Abtheil); "Ueber die Function der Kammernerven des Säugthierherzens," *Ibid*, p. 522.

Made experiments in the Physiol. Inst., Leipsig, on the exposed heart nerves of dogs.

Worm, Muller Jacob. B. at Bergen, 1834. Studied Med. and Nat. Sci. at Christiana; Practised Med. in Christiana from 1860-1865; studied ophthalmology Vienna and Brun, 1866, and then dedicated himself to Physiology; Private Prof. Christiana, 1870; Prof. Extraord., 1873; Prof. in Ord., 1878; Pres. Norwegian Med. Soc.

Contrib. various articles to Pflüger's Archiv, "Untersuchungen aus dem physiol. Lab. in Wurzburg," "Poggendorff's Annalen," etc.

Wurtz, Ch. Adolphe. B. at Strasburg, 1817; d. in Paris, 1884. M.D. Strasburg, 1843; Dean of Faculty of Med., Paris, 1865; Prof. Med. Chemistry; Prof. Organic Chemistry Faculty of Sciences, 1876.

"Mémoires sur les ammoniacques composés," 1856; "Sur l'insalubrité des résidus provenant des distilleries," 1857; "Leçons de philosophie chimique," 1864; "Traité élémentaire de chimie médicale," 1864; Leçons élémentaires de chimie moderne," 1866; "Dictionnaire de chimie pure et appliquée," 1868-1878; etc.

Wyatt, William Thomas, 1, Shaftesbury Villas, Stamford Hill, N. M.A. Oxon., 1880; B.A. (1st Class Honours in Nat. Sci.), 1876; M.B. 1880; M.R.C.S., Eng., 1879 (Oxf. and St. Barthol.);

Schol. in Anat. and Physiol., 1877; Foster Prizem. in 1878; and Kirke's Gold Medallist St. Barthol.; formerly House Surgeon and House Phys. St. Barthol.

Held a License for Vivisection at Saint Bartholomew's Hospital Medical School in 1878. No experiments returned.

Yeo, Gerald Francis, King's College, Strand, W.C. M.D. Dub., 1871; M.B. and M.Ch., 1867; Dipl. in State Med., 1871; F.R.C.S. Eng., 1878; L.R.C.S.T. 1872 (T. C. Dub., Paris, Berlin, and Vienna); Prof. of Physiol. King's Coll. London; Lect. on and Exam. in Physiol. R.C.S. Eng.; late. Asst. Surg. King's Coll. Hosp.; and Lect. on Physiol. Carm. Sch. of Med. Dub.; Member of the Association for the Advancement of Medicine by Research.

Author of "Diseases of the Kidney" (awarded Gold Medal of Path. Soc. Dub.); Contrib. to Proc. Path. Soc. Dub., etc., etc.

Held a License for Vivisection at King's College, London, Physiological Laboratory and Anatomical Theatre in 1878-79-80-81-82-83. Certificates for Illustrations of Lectures and for Dispensing with obligation to Kill in 1878-79-80-81. Certificate for Illustrations of Lectures in 1882 and 1883.

"Why repeat the oft-told tale of horrors contained in the works of Claude Bernard, Paul Bert, Brown-Séquard, and Richet, in France; of Goltz, in Germany; and Flint, in America."—G. F. Yeo, *Fortnightly Review*, March, 1882.

"I am proud to call him (Goltz) my friend."—G. F. Yeo, *Contem. Review*, May, 1882.

[It was reported in the *British Medical Journal* and the *Lancet* that at a meeting of the Physiological Section of the International Medical Congress, held in London in 1881, Professor Ferrier had shown two monkeys, a portion of whose cortex had been removed by himself. As Professor Ferrier had no license for vivisection at the time, a prosecution was instituted against him for a breach of the law. When the case was brought into Court, the *onus* was shifted on to Professor Yeo, who was a licensed vivisector. Below is a comparison between the facts as reported and the sworn evidence of the reporter of the one journal and the editor of the other:—]

British Medical Journal.

PUBLISHED REPORT,
20th August, 1881.

The members were shown two of the monkeys, a portion of whose cortex had been removed by Professor Ferrier. Concerning the first of these, Professor Ferrier said it had been his desire to remove as completely as possible the whole of the psycho-motor region. Whether in this he had succeeded perfectly could not be learnt for certainty until after a *post-mortem* examination had been made.

REPORTER'S SWORN EVIDENCE.
17th November, 1881.

Q. Did Professor Ferrier offer to exhibit two of the monkeys upon which he had so operated?

A. At the Congress, no.

Q. Did he subsequently?

A. No; he showed certain of the members of the Congress two monkeys at King's College.

Q. What two monkeys?

A. Two monkeys upon which an operation had been performed.

Q. By whom?

A. By Professor Yeo.

PUBLISHED REPORT,
8th October, 1881.

"The interest attaching to the discussion was greatly enhanced by the fact that Professor Ferrier was willing to exhibit two monkeys which he had operated upon some months previously." . . .

"In startling contrast to the dog were two monkeys exhibited by Professor Ferrier. One of them had been operated upon in the middle of January, the left motor area having been destroyed. There had resulted from the operation right sided hemiplegia, with conjugate deviation of eyes and of head. Facial paralysis was at first well marked, but ceased after a fortnight. From the first there had been paralysis of the right leg, though the animal was able to lift it up. The arm it had never been able to use. Lately, rigidity of the muscles of the paralysed limbs had been coming on. The other monkey, as a consequence of paralysis of its auditory centres, was apparently entirely unaffected by loud noises, as by the firing of percussion caps in close proximity to its head."

"At a meeting of the Physiological Section of the International Medical Congress held in London in 1881, Professor Goltz exhibited a dog, and Professors Ferrier and Yeo a monkey; from the brain of the dog a large area of the cortex had been removed without producing any such effect as, according to Professor Goltz, would necessarily result if the theory, as usually held, of the localisation of function of the cortex were true; from the brain of the monkey a definite part of the so-called motor area had been removed, and a localised paralysis produced—a paralysis which, according to Professors Ferrier and Yeo, could not result if that theory were not true."—"On the Cortical Areas removed from the Brain of a Dog and from the Brain of a Monkey," a Report by Dr. Klein, Mr. Langley, and Professor Schäfer, *Journal of Physiology*, Vol. IV., 1884, p. 231.

Yule, C. J. F. M.A.; Lecturer on Exper. Physiol., Magdalen Coll. Oxford.

Held a License for Vivisection at University Oxford Laboratory, Magdalen College in 1878 and 1882. Certificates for Illustrations of Lectures, 1878 and 1882.

COUNSEL'S STATEMENT.
17th November, 1881.

Dr. WAKLEY, sworn, examined
by Mr. Waddy :—

Q. Are you the editor of the *Lancet*?

A. I am.

Q. Can you tell me who it was furnished his Report?

A. I have the permission of the gentleman to give his name, Professor Gamgee, of Owen's College, Manchester.

Mr. WADDY: What I should ask is that one might have an opportunity of calling Professor Gamgee.

Mr. GULLY: I have my reasons for objecting to this. We have communicated with Professor Gamgee and I know very well that he will say precisely what was said by Dr. Roy.

Zander, Richard. M.D.; Prosect. Anatom. Inst., Königsberg, Prussia.

Contrib. to Centralblatt f. d. Med. Wissenschaften, 1879.

"In the year 1878 I made a series of experiments on the results of section of the vagus in birds, occasioned by the title of the Prize Essay of the Medical Faculty of Königsberg,—According to Blainville and Billroth section of the nervi vagi in birds has no influence on the condition of the lungs. It is to be experimentally proved why birds die after this operation. . . . As my experiments in many points contradict those of Eichhorst, I will here shortly give the results of over eighty experiments on birds principally pigeons. My completed work, which was awarded the prize by the Medical Faculty on the 18th of Jan., will shortly appear.—*Centralbl. f. d. Med. Wiss.*, 1879, p. 99.

Zuntz, Nathan. Prof. of Anim. Physiol. Univ., Berlin; form. Prof. at Bonn; Direct. of the Agricul. Acad., Poppelsdorf.

Author of "Beiträge zur Physiologie des Blutes," Bonn, 1868; "Innervation der Athmung," Biol. Centralbl., Vol. II., No. 6 (1882); "Ueber die Bedeutung der Amidsubstanzen für die thierische Ernährung," Arch. f. Physiol. (1882); "Zur Theorie des Fiebers," Centralbl. f. d. Med. Wiss., No. 32, 1882, p. 561.

Made experiments with curare on rabbits.—"Ueber den Einfluss der Curarevergiftung auf den thierischen Stoffwechsel," Pflüger's Archiv, Vol. XII., p. 522.

ADDENDUM.

Sinétý, Louis de, 10, Rue de la Chaise, Paris. M.D., 1873. Formerly Prof. Gen. Anat. Med. Fac.

Author of "De l'État du Foie chez les femelles en lactation" (Thèse), Paris, 1873; "Traité pratique de Gynécologie," Paris, 1879; second edition, 1884.

"On female guinea-pigs, which have only a single pair of mammæ, we have made the ablation of these glands during lactation."—"*Manuel Pratique de Gynécologie*," Paris, 1879, p. 778.

"I wish to communicate to the Society the results that I have obtained by the ablation of the mammæ in animals. Dogs and rabbits with their six or eight mammæ were unable to survive these experiments. I chose in preference guinea-pigs, which have, as is known, only two mammæ, and in which the disposition of the ducts renders the operation easy, I might almost say harmless, even during the period of lactation; for out of six females operated on in the month of September not one died, and all of them are still

to-day subject to observation."—*Report of the Meeting of the Soc. de Biologie, December 20, 1873, "Gaz. Méd. de Paris," 1874, p. 36.*

"I have myself made a fair number of experiments relative to the innervation of the mammary glands on female guinea-pigs. . . . Considering the contradictory results, it would be well to describe the experiments before arriving at any conclusions. . . . Experiment No. 1, June 10, 1874.—Guinea-pig in lactation. The mammary nerve on one side is laid bare, and insulated by means of a thread. The animal exhibits signs of acute pain, especially when the nerve is stimulated by an electric current; but the stimulation, prolonged during 10 minutes, produces no appreciable effect on the teats nor on the amount of milk secreted. I divided the nerve, and on the following day, June 11, there was as much milk in one gland as in the other; nor did the electric stimulation re-applied to both ends of the divided nerve produce any apparent effect on the glandular function. . . . I have selected these five experiments from those I had noted down in my book, as I made them under varying conditions. In all of them the results were negative. . . . Rochrig observed that in the goat the effects were different—as M. Lafont had said—which proves once more that the conclusions arrived at must not be generalized, and that the phenomena may vary considerably according to the species of animal."—"De l'Innervation de la Mamelle," *Report de la Soc. de Biologie, October 25, 1879, "Gaz. Méd. de Paris," 1879, p. 593.*

THE END.

